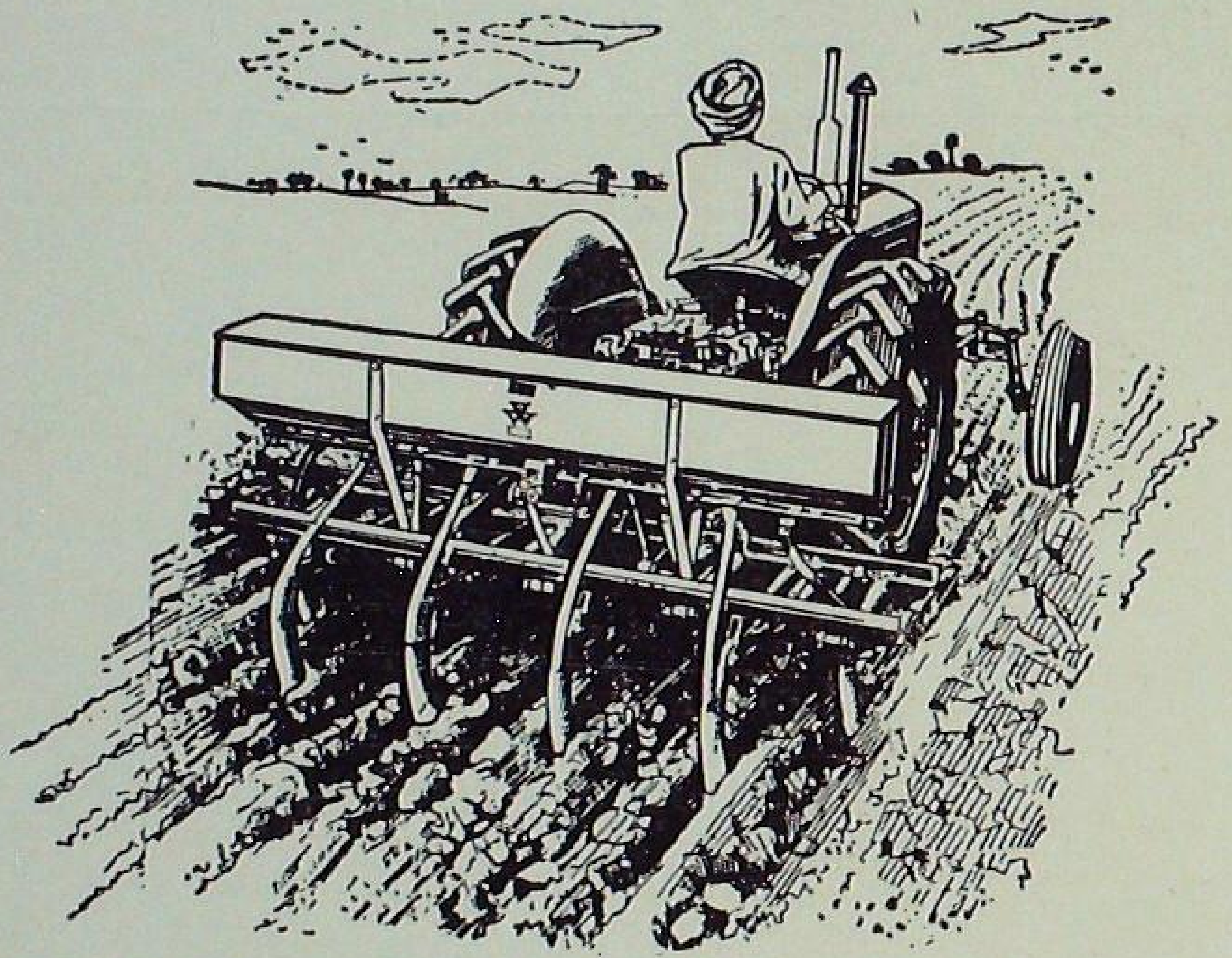
EXTENSION

OFFICE OF THE PRINCIPAL
6 - DEC 1961
RURAL EXTENSION TRAINING CENTRE

THE FARM AND FARM HOME MAGAZINE November, 1961

INCREASE YOUR RABI CROPS WITH A
MASSEY-FERGUSON SEEDING ATTACHMENT



- A COMPLETE CULTIVATING AND SEEDING TOOL — ONE MAN AND ONE OPERATION
- EASY TO FIX AND REMOVE — SIMPLE TO SERVICE
- FRACTIONAL CONTROL OF SOWING DEPTH, AT TWO CULTIVATING DEPTH-RANGES
- ROW SPACING ADJUSTABLE FROM 7"
- AUTOMATIC SEED CUT-OFF FOR HEADLAND TRAVEL
- STURDILY MADE TO EXACTING SPECIFICATIONS FOR THE ROUGHEST, TOUGHEST, WORK
- FITS ALL M-F 9-TINE TILLERS, AND ALL TE-20 AND M-F 35 TRACTORS

— CONTACT YOUR M-F MAIN DEALER IMMEDIATELY !! —

M F TAFE

Tractors and Farm Equipment Limited
Madras

T.F. 53

THE PICTURE ON THE COVER

Plant cane or ratoon? You can't tell the difference if you give the ratoon also the same care you give the plant crop. In fact, some farmers get better yields from the ratoon than they get from the plant crop this way.

—Photo by Gurcharan Singh

EXTENSION

THE FARM AND FARM HOME MAGAZINE

Vol. II November, 1961 No. 5

CONTENTS

FARM AND GARDEN CROPS

Yo can grow phalsa where you like ... 2

A truck-load of money from vegetables ... 4

Tondli is a thousand-rupee vegetable ... 9

Making money with late cauliflowers ... 22

FARM IMPLEMENT

Shelling maize cobs? ... 13

FARM ANIMALS

Always select the better animal ... 11

FARM PESTS

Rats—the only way to get rid of them is to kill them ... 18

FARM TIPS 7

FARM HOME

Milk—but from groundnut ... 25

SPECIAL FARM FEATURE

Richer paddy harvests in West Godavari ... 14

FARM INFORMATION UNIT
DIRECTORATE OF EXTENSION, MINISTRY OF FOOD AND AGRICULTURE, GOVT. OF INDIA, NEW DELHI

Principal Editor	M.G. Kamath
Editor	T.C. Roy
Associates	Lal Karamchandani
	Sham Govind Ranade
	Shukla Das
Art Editor	Pratap Deb
Business Manager	R.D. Khanna

Annual Subscription : Rs. 5.50
Single Copy : 50 nP.

By L VENKATARATNAM

YOU CAN GROW PHALSA WHERE YOU LIKE

WHEN people talk of the need for a very good land for growing fruit, they forget the *phalsa.*

Phalsa is the hardy fruit tree that can thrive in any soil, even in shallow soils with gravelly or rocky layer below, on waste lands, along borders of rivers and ravines. It has a fast-growing root system, and once established, it can face drought or severe summer very easily. The tree can be used for plugging gullies and ravines, and grown along contours to protect bunds. Small farmers will find *phalsa* ideal for growing along the hedge or field boundary, thus saving their cultivable land for crops.

There are two kinds of *phalsa* : *Chhatri Phalsa* and *Bush Pholsa.* The former is umbrella-shaped, 10 to 12 feet high and is suitable for growing in house compounds, backyards of bungalows and farmsteads. You can raise seedlings of *Chhatri Phalsa* from fruits collected during summer. Three to six-month-old seedlings can be planted as stray trees. They grow fast and come to bearing in the third year. The variety is rarely cultivated and trees are usually left to grow as such. In some places as in the Punjab, they are pruned at three feet height during December-January and kept as a shrub, to yield a crop every year in summer.

Bush Phalsa is grown in and around Hyderabad City on about 100 acres. Seeds are collected during April-May and are sown in nursery-beds with a spacing of six inches between rows and two inches between seeds in the row. Seeds germinate after a fortnight and seedlings are one-foot high by September, when they are ready for transplanting. Seedlings are planted five feet apart either way.

Land which is generally not suitable for fruit growing, or is uneven and undulating, or shallow with rocky sub-strata is chosen for growing *phalsa.* Usually pits of 1½ feet cube are dug and manured with tank silt. Local manures like farmyard manure or ashes can also be used at four to five seers per pit. Seedlings, a foot in height, are lifted naked with the roots and are planted, preferably during the rainy season.

Phalsa is not bothered by weeds, as it is hardy. When planted during August-September, it grows fast after resting during winter. In a

A one-year old phalsa crop

year's time, it grows two feet high with six to ten branches. In the first year, weeds are cleared and a crop of sunnhemp or *mung* is taken between June and September.

The land is ploughed in October just when the rains cease. Very little cultivation needs to be done between October and December.

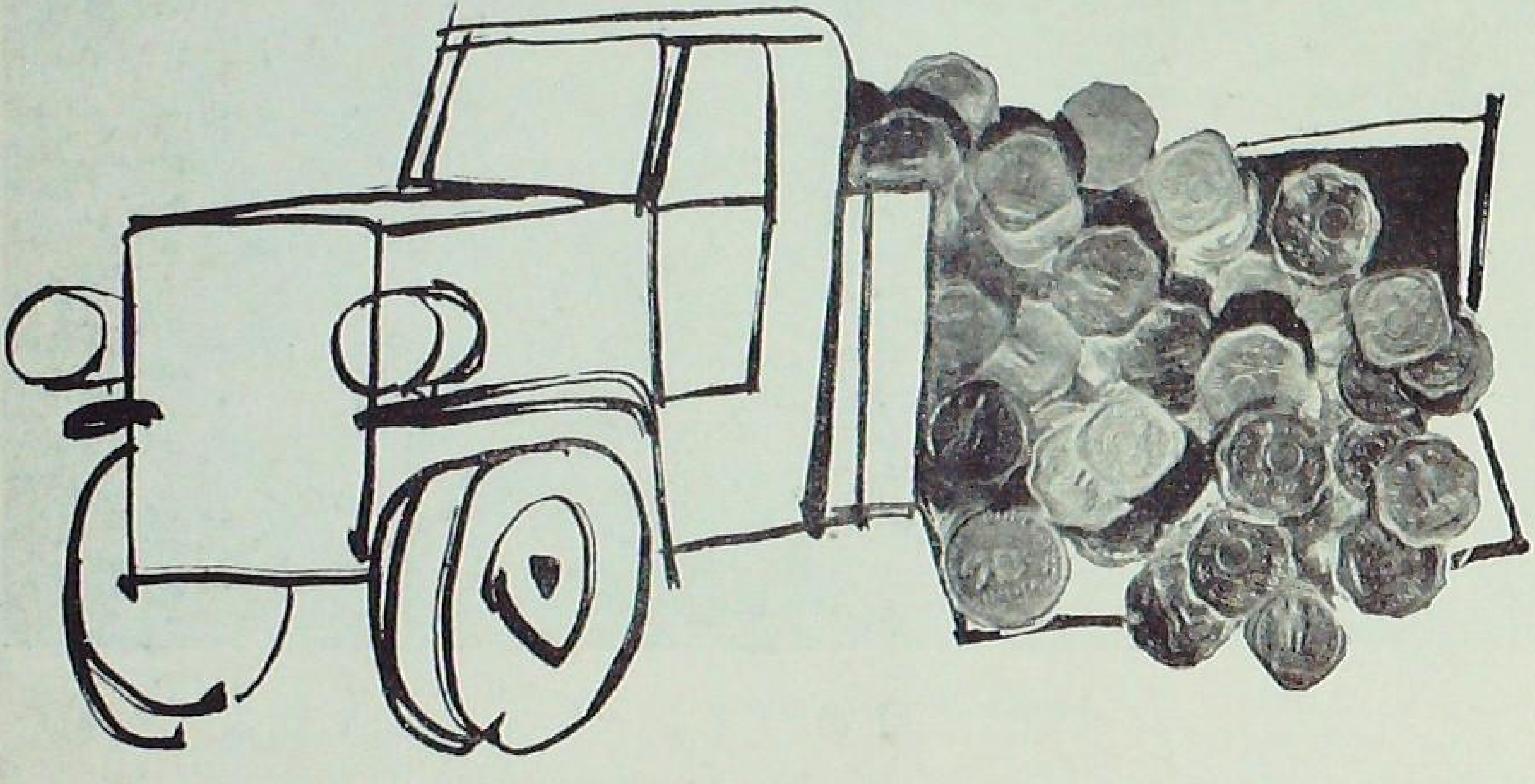
Phalsa goes to rest during December. The leaves wither and die gradually in January, and all shoots are pruned completely keeping only stubs or thick shoots, two inches long from ground level. Weeds, grasses, and leaves are heaped round the plant and a slow burning fire is lit. The slow fire gives a shock treatment to *phalsa*. This is called 'smudging.'

Two days after pruning, a cigarette tin-ful of any oilcake—say, of castor or *neem*—with half its quantity of superphosphate is applied and mulched round each plant. Where irrigation is possible, watering is done at intervals of 10 to 15 days. Irrigation makes the plant grow fast after pruning. The fruit-size also increases by giving irrigations, especially during March-April. *Phalsa* starts flowering about four weeks after pruning and manuring.

The fruits come to harvest in April. Each plant gives half a seer of berries. Generally, farmers sell their crop to petty merchants who harvest and pick the crop daily and market it locally. An acre of *phalsa* can give an income ranging between 800 and 1000 rupees a year.

Phalsa yields a delicious drink. It is used for making squash, jam and pickles. There is a great demand for *phalsa* squash in summer. *Phalsa* cultivation can be taken up around cities and towns for meeting the demand for fruit-drinks during summer.

A TRUCK-LOAD OF MONEY



FROM VEGETABLES

By M. G. KAMATH

A young vegetable farmer of Rajasthan has this advice to give to other vegetable growers: You can make vegetables pay by the truck-load, if you stick to one principle. The principle is that you specialise growing one kind of vegetable, and not a variety of them.

The farmer, Shri Vijaylaljee of Motigirh near Jaipur, bases this advice on his own experience of the past three years. His vegetable farm is of four acres, and he grows cauliflower on all the four acres.

He has two sound reasons for giving this advice. If you grow one type of vegetable only, you are able to give an intensive cultivation and full attention to the crop. Secondly, your marketing problem is easily solved. It is easy to find agents to buy your cauliflower crop. If there are a number of vegetables to be sold, he says, your efforts and your attention get divided.

And, following this principle, Vijaylaljee gets a gross return of Rs.30,000 from his four acres of cauliflower. He and four other members of his family work on the vegetable farm, and his expenses come to Rs. 16,000.

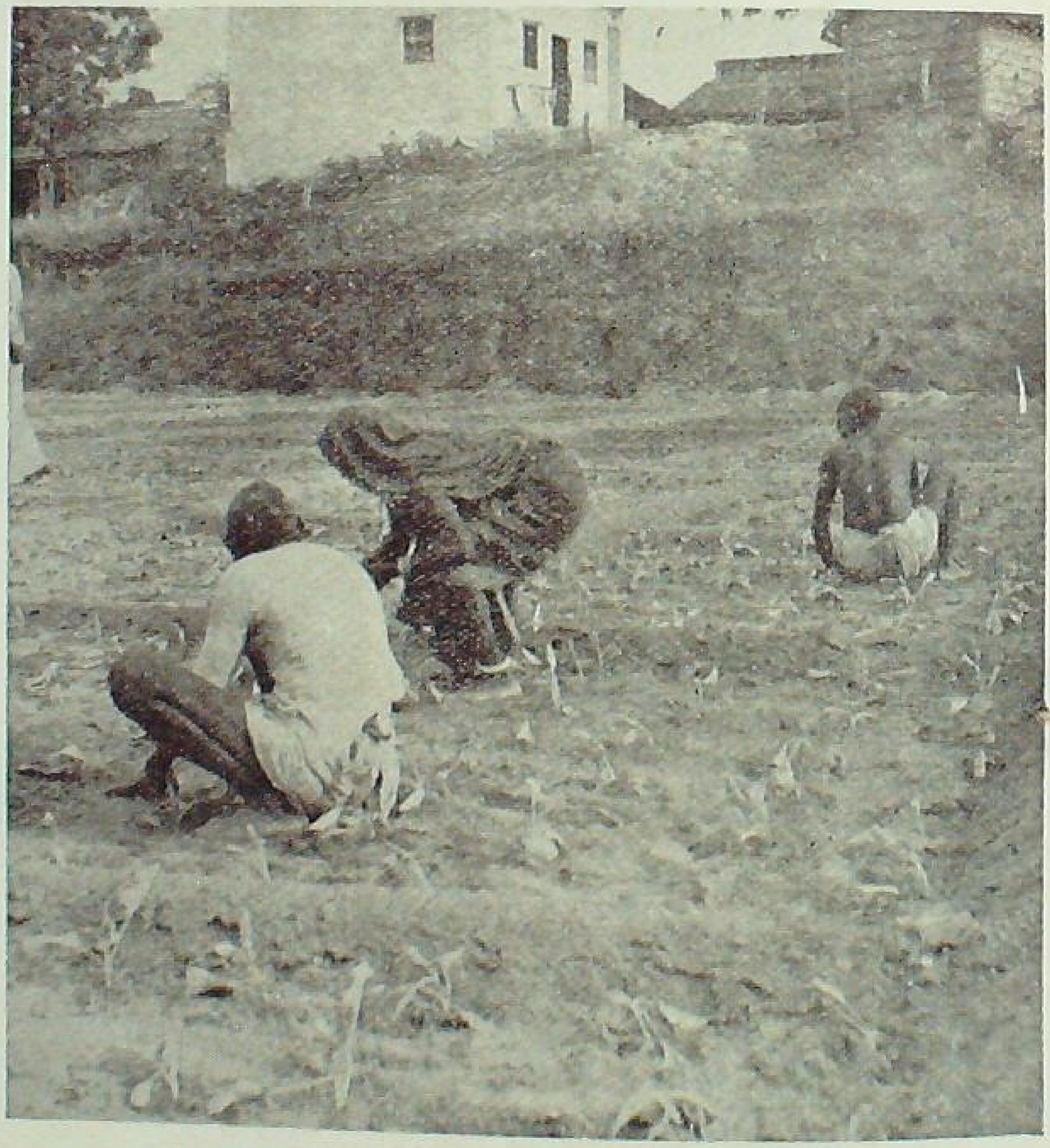
Other important things he does in his intensive cauliflower cultivation are:

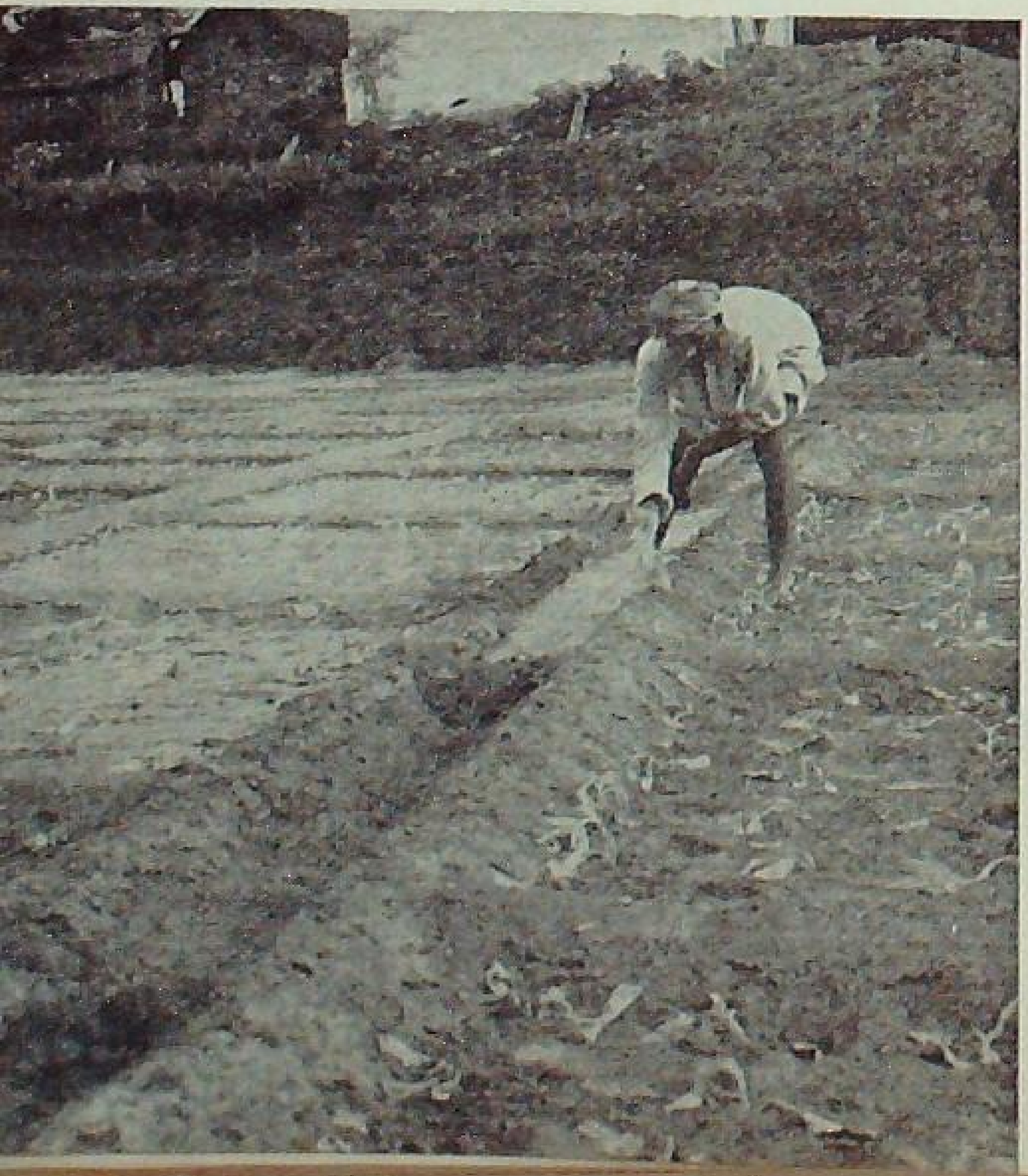
Gives a good cultivation to the soil. Uses *desi* and soil-turning ploughs for the purpose.

Uses a heavy dose of town compost as the basal manure for the crop.

Takes care to raise healthy seedlings ; buys his seed from reliable sources. "No point in raising from own seed," he says. Keeps nursery free of weeds.

Transplants seedlings in field ready with beds and channels. Applies ammonium sulphate at three maunds and superphosphate at two maunds per acre as top-dressing.





Sees to it that the crop gets all the water it wants ; is watchful against cutworms. Uses 10 per cent BHC against them, taking care not to use BHC after the cauliflower heads appear.

With this attention, he harvests 15 truckloads of cauliflower in a season !

Better Farming Tips

A NEW COTTON FOR UTTAR PRADESH

A new improved cotton, tolerant to heavy rains has been developed by the Indian Central Cotton Committee in co-operation with the Uttar Pradesh Department of Agriculture for growing in the *desi* cotton tract of the State. *Raniben* is its name.

This new variety gives better yield, quality, fibre-length and fibre-weight than *35/1*, the improved variety grown by farmers, and should get farmers an additional profit of Rs. 40 per acre.

Since *Raniben* can withstand heavy rains, it will be able to give 20 per cent more yield, even in seasons of untimely rains. Variety *35/1* suffers if there are late rains.

The new variety is suitable for growing in Meerut, Muzaffarnagar, Saharanpur, Bijnor and Moradabad Districts of the Uttar Pradesh.

CORIANDER IN CANE FIELDS

YOU can make each sugarcane acre pay for its seed and manure if you grow coriander in between the cane rows. What coriander (*dhania*), grown this way, will fetch will easily pay for the cost of setts and manure needed for an acre of sugarcane, research in Bihar shows.

Coriander has to be sown at 4½ seers per acre behind the plough in October, after the cane setts have been planted in furrows (opened three feet apart). The coriander seed is covered with a *hanga*.

Coriander is harvested towards the end of February, after which a deep interculture and irrigation is given to the sugarcane crop.

Growing coriander this way will have no bad effect on the sugarcane crop.

PUTTING DOWN THE MOLYA ROG

A three-year crop rotation is being advised in Rajasthan as a way of controlling *molya rog* on wheat and barley.

In recent years, this disease is found to cause severe damage to the crops. It is caused by a nematode found in the soil.

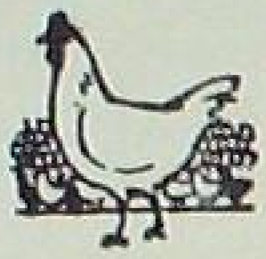
When the crop gets the disease, leaves show yellowing, and seedlings get stunted. Where the disease is severe, seeds sown are killed before they can germinate. Even if some germinate and produce seedlings, these show no growth after the second or third leaf stage, and slowly turn pale and die out.

If the attack takes place when seedlings are six to nine inches high, further growth is stopped. Such plants form no grain. Affected seedlings, when uprooted, show swellings on the roots.

Following a good crop rotation has been found to reduce the attack of the disease to a great extent.

The State Department of Agriculture recommends that farmers grow legumes like *guar* or pulses in the *kharif*, followed by wheat and barley in the *rabi* in the first year, maize or *bajra* in *kharif* followed by carrots, *zeera* or onion in *rabi* in the second year, and green manure like *guar* or sannhemp in the *kharif* and wheat or barley (which is given a good dose of ammonium sulphate) in *rabi* in the third year.

POULTRY LEAFLETS



10 nP Each

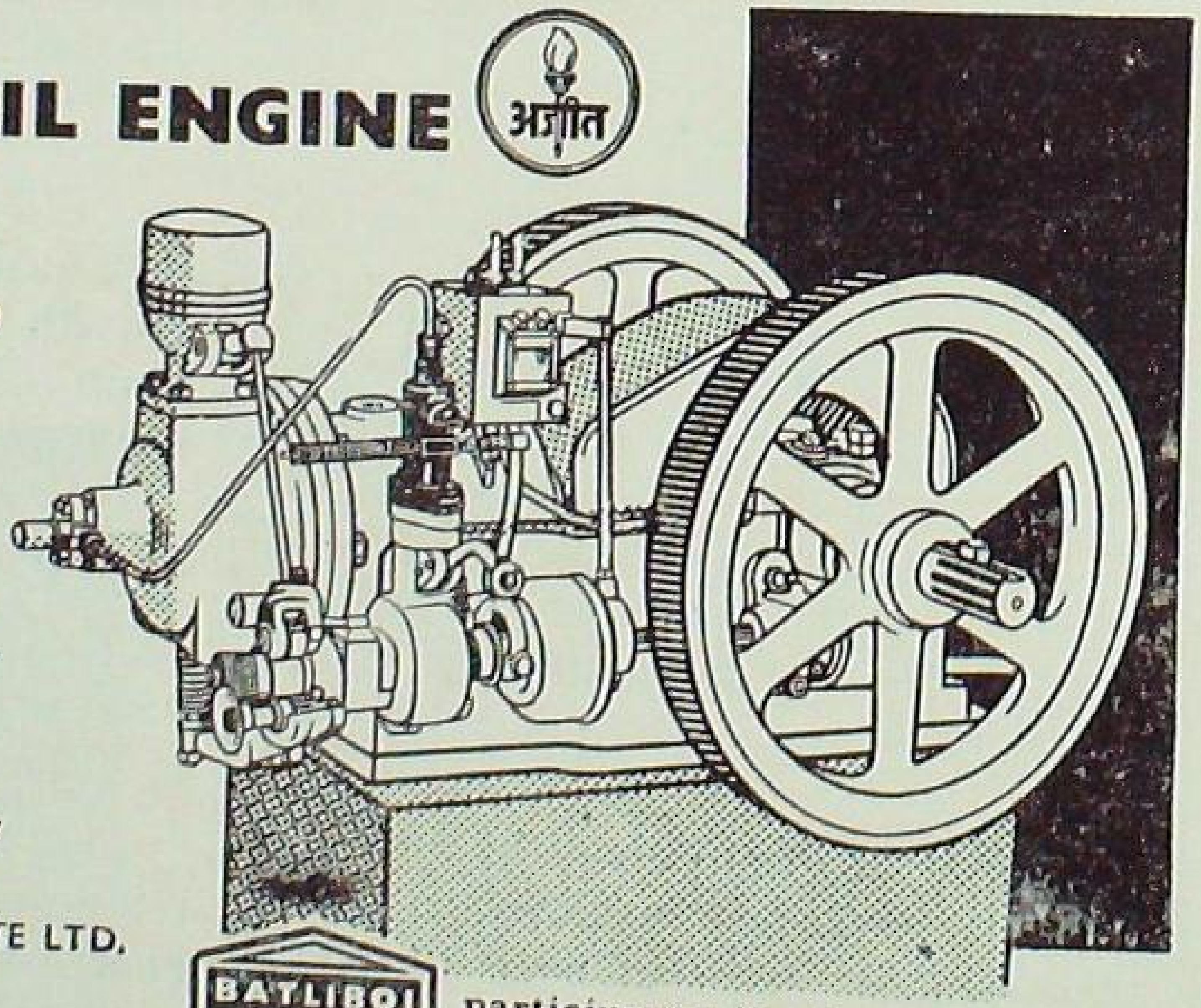
How to fight coccidiosis in poultry
Protect your poultry birds against Ranikhet
Save your fowls from tick fever
Fighting fowl pox in poultry
How do you transport your poultry birds ?
Watch out for pullorum
Culling poultry for profit
How to make a brooder for your chicks
How to start a poultry farm
How to control lice on poultry
Tapeworms in poultry

Your chickens and infectious coryza
The egg and you
Making eggs keep fresh
How to pack eggs for transport
Selecting poultry birds for breeding
Selecting birds for poultry show
Moulting in poultry
Poultry keeping for egg production
Feeding poultry for profit
Do your hens pay ?

Copies available from :
The Business Manager
DIRECTORATE OF EXTENSION
Krishi Bhavan, New Delhi.

AJEET OIL ENGINE

This heavy duty, slow speed engine is
★ Economical ★ Dependable
★ Robust ★ Easy Starting
and will give you years of steady, dependable service.



Manufacturers :
M/s. Patel Mavji Kanji & Bros.
Rajkot (Saurashtra)

Sole Selling Agents :
BATLIBOI & COMPANY
Props :
BHOGILAL LEHERCHAND PRIVATE LTD.

BATLIBOI participants in planned progress

55/5, G.B. Road, New Chowri, Delhi

"Super House", G.T. Road, Millerganj, Ludhiana

BBY-32A

Tondli
is a thousand-rupee Vegetable

By CHANDRAKANT KULKARNI

MANY farmers in western India are earning thousands of rupees an acre every year by cultivating *tondli*, the year-round vegetable.

On the farm of the Agricultural School, Manjri, Poona, Maharashtra, we could get a net profit of 1,000 rupees in one year from an 1/8 acre *tondli* plot.

Green *tondli* fruits which are very good as vegetables are similar to those of *parwal* grown in north India. The *tondli* plant is a vine like those of *kheera*, *karela*, or *kaddu*, etc. But unlike these, it yields green fruits for a number of years.

Tondli can be grown in any well-drained soil. It is particularly suitable for growing in the vicinity of cities where *tondli* has a regular market. If it cannot be cultivated on a large scale, then a couple

of vines in your backyard will provide you a fresh green vegetable all the year round.

In 1959, we twice ploughed and thrice harrowed the plot selected for growing *tondli*, and prepared basins of three feet diameter each, eight feet apart. There were 66 such basins in the plot. We applied two basketfuls of well-rotted compost in each basin and mixed it thoroughly with the soil. In the month of November, that year, in each basin, we planted four $\frac{1}{2}$ to $\frac{3}{4}$ inch thick cuttings having three buds. Each cutting was about a foot long. The distance between the cuttings in a basin was nine inches.

Later we thinned the cuttings, retaining only two vigorous ones in each basin. As the cuttings started growing, a bamboo stick was fixed near each one and the main shoots were trained on them. All the side shoots appearing in the leaf axils were regularly trimmed off till the vines reached the bowers specially constructed at a height of $5\frac{1}{2}$ feet.

For the bowers, 8 and 12 gauge galvanized iron wire was fixed on wooden poles pitched 10 feet apart. Within six months of planting, the bowers were completely covered with the vines, and from that time, that is from May 1960, vegetables were regularly harvested every eight days.

We gave the plants ammonium sulphate at the rate of 20 pounds nitrogen per acre every three months and superphosphate at 112 pounds per acre every six months. The plot was irrigated every eight days and was regularly weeded.

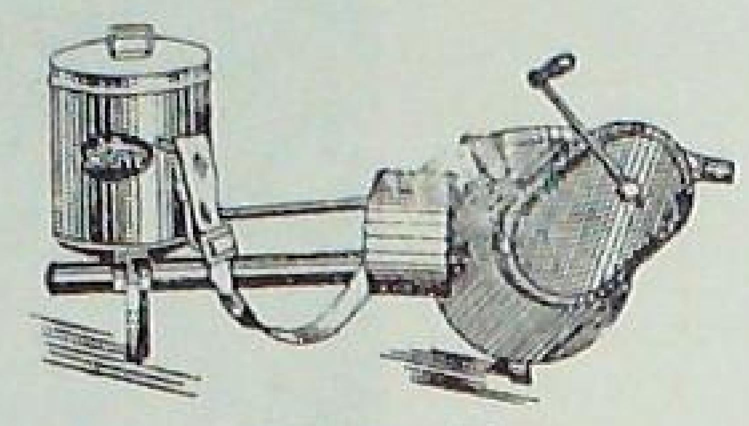
We pruned the vines in September, 1960, and again in April, 1961. Shoots which were as thick as a finger were heavily pruned leaving two buds on each of them. The basins were exposed to the sun for a week; and later one basket of compost was added to each pit. Within a month after pruning, the bowers were again covered with new growth. Pruning keeps away powdery mildew and gives rest to the plants.

Fruit fly is a common pest of the crop. To control it, affected and ripe fruits should be removed and buried deep in the soil. Powdery mildew disease also damages the crop seriously, especially during *kharif* when the climate is favourable for the development of the disease. Dusting of sulphur or spraying ultra-sulphur or Geigy 1250 at weekly intervals in addition to pruning, checks it to a great extent.

From May, 1960, to April, 1961, we harvested 6,182 seers of fruits from our 1/8th acre plot which fetched us 1,458 rupees, while the cost of cultivation of that plot came to only 450 rupees. This included 1/10th of the cost of construction of bowers, as the galvanized wire bowers easily last for 10 years.

Thus, we could get a profit of a little more than 1,000 rupees from our 1/8th acre plot.

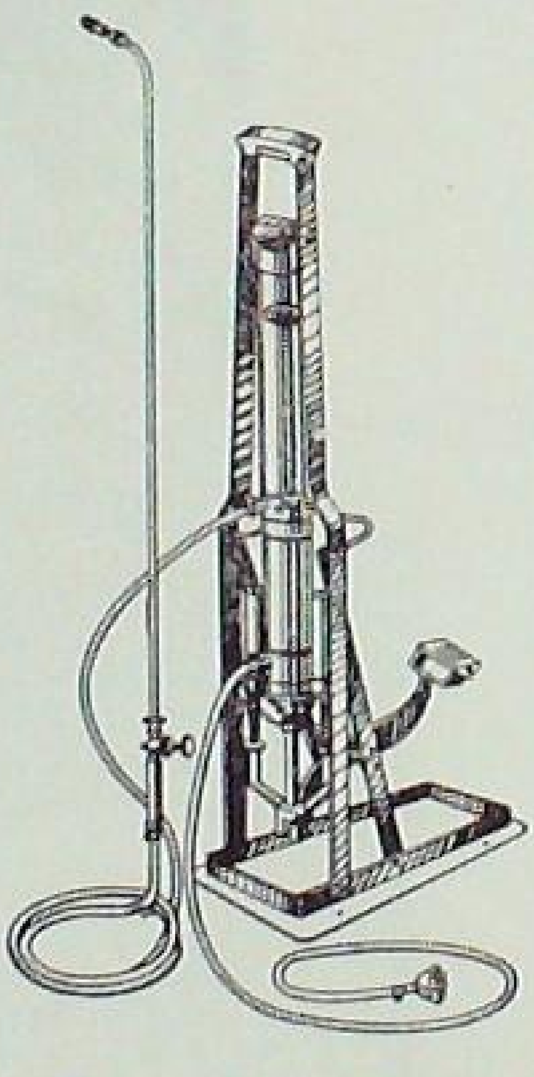
BEST INDIAN MAKE
DUSTERS & SPRAYERS



ORIENT

HAND ROTARY DUSTER
SUITABLE FOR DUSTING ON

Field Crops, Stables, Godowns, Anti-Malarial Work & Control of Blister Blight of TEA & COFFEE !



MARUTI

FOOT SPRAYER

For spraying on tall trees, coffee, mango, orange and apple trees.

Two spray attachments can be fitted with any length of delivery hose upto 500 ft.

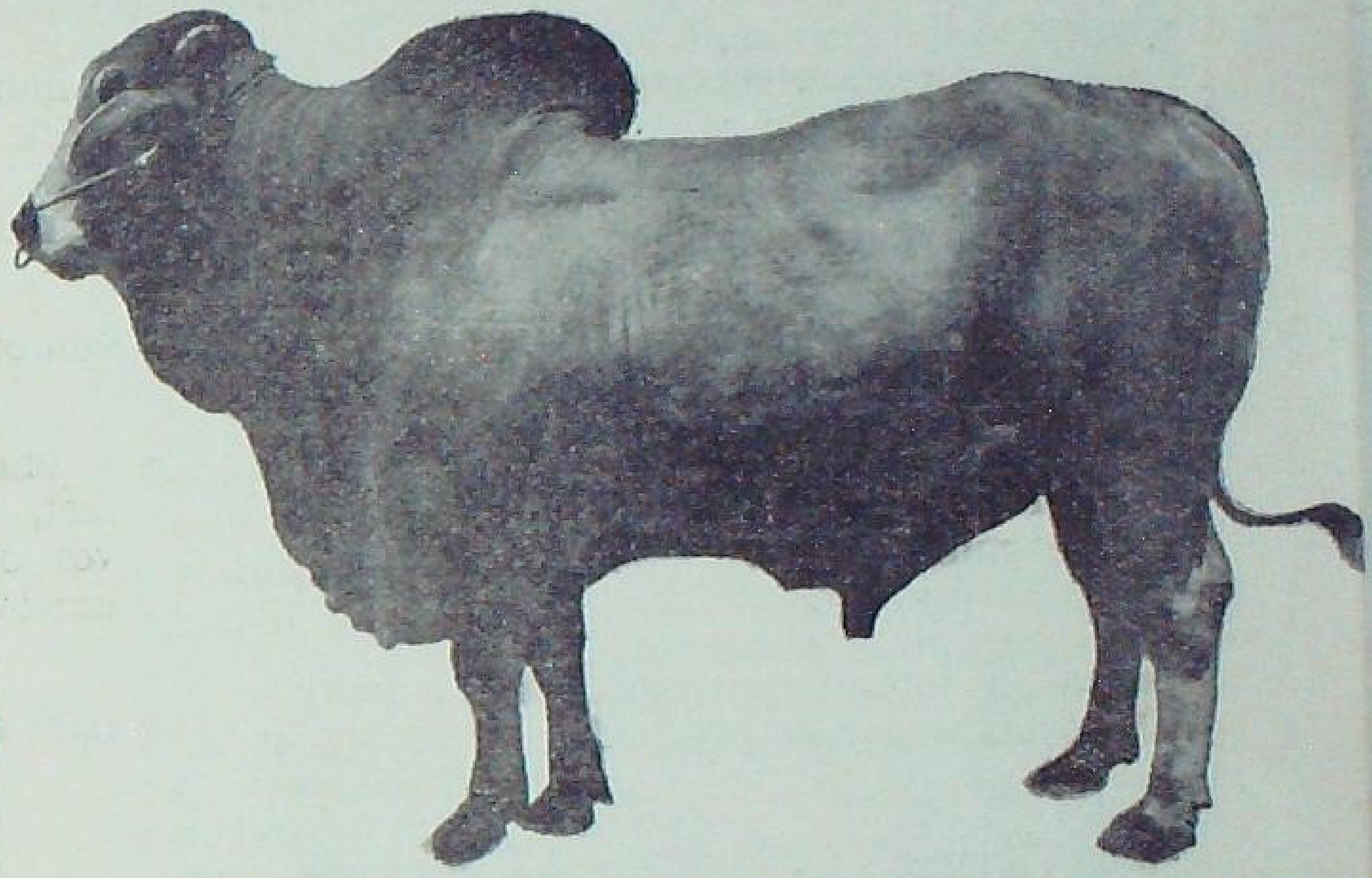
Manufacturers :-

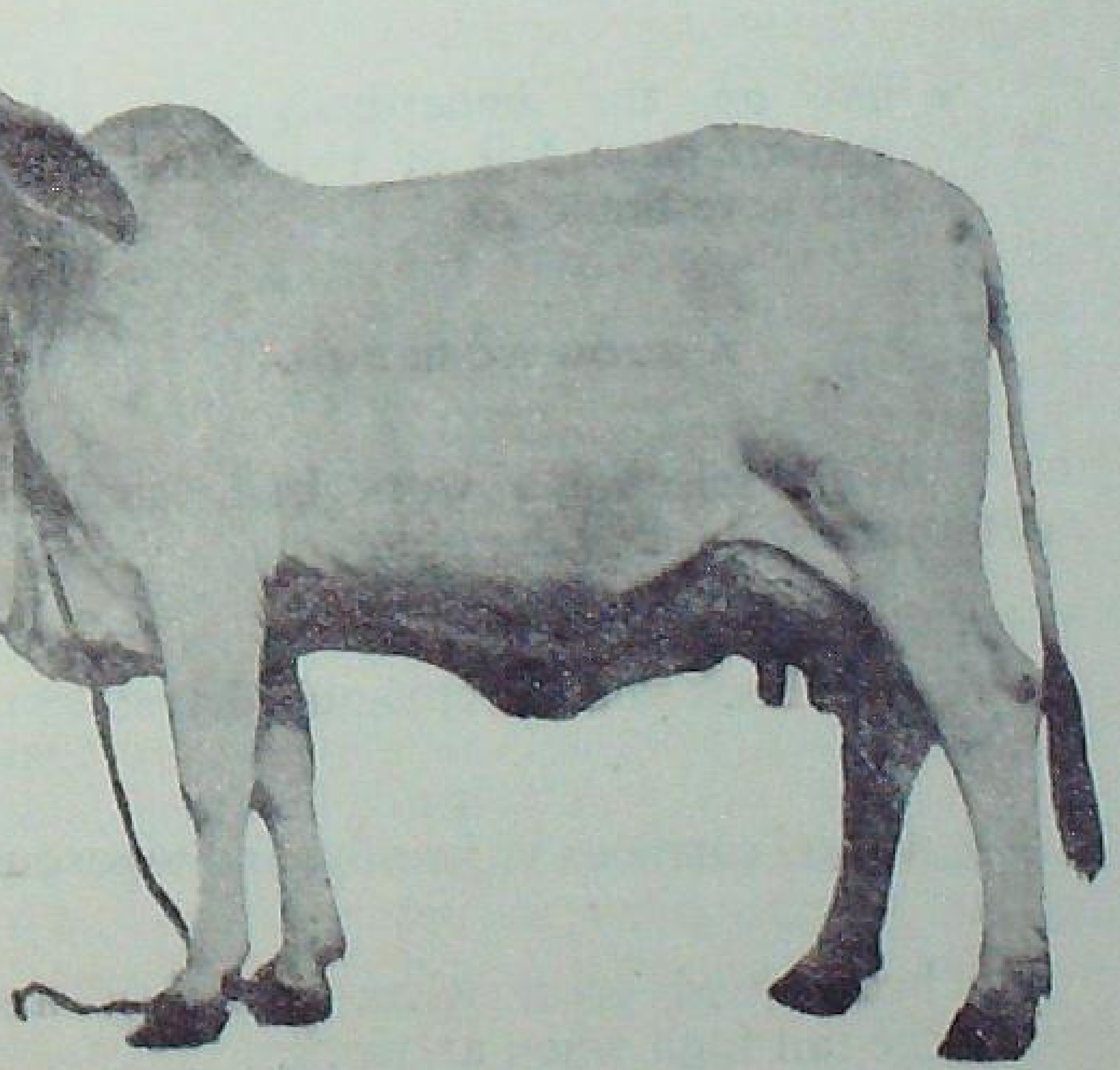
AMERICAN SPRING & PRESSING WORKS (PVT.) LTD.

MALAD-BOMBAY-64.

Pnone : 84221
84245

Gram : KILLOCUST
MALAD





ALWAYS SELECT THE BETTER ANIMAL

By HARBANS SINGH

MAKE it a rule to always select the better animal—whether it be a milch cow or a work bullock. It may mean a little more

money to be spent at the beginning; but a poor animal costs as much to keep as a good animal, and a better milch cow or work bullock will ensure better and quick returns for the money you spend on it.

A GOOD MILCH COW

In selecting a milch cow, keep the following points in mind.

A good milch cow :

- will be vigorous and healthy; gentle and mild;
- has a loose-knit frame, with a more or less wedge-shaped body;
- has a large and roomy udder attached high up between the hind legs, extending far forward towards the navel, it should be soft and spongy, collapsing after milking;
- has well spaced and uniform teats of a convenient size;
- has on the under-belly milk veins, that are large, full of twists and turns and have branches.

A GOOD WORK BULL

While selecting a work bull, similarly determine the following points.

A bullock you select should have:

- a good carriage, be healthy and vigorous;
- head held erect when standing and the tail high when at work;
- a good body size and plenty of height behind the hump for the breed;
- a walk, free and fast with easy gait ;
- a muscular and strong neck (a heavy neck means good pulling power; a thin and muscular neck means speed in the animal) ;
- smooth, straight and strong legs;
- a fine tail, not too long, and tapering feet, hard and compact; the two halves of the hoofs should be even with a narrow cleft in-between.
- tight skin.

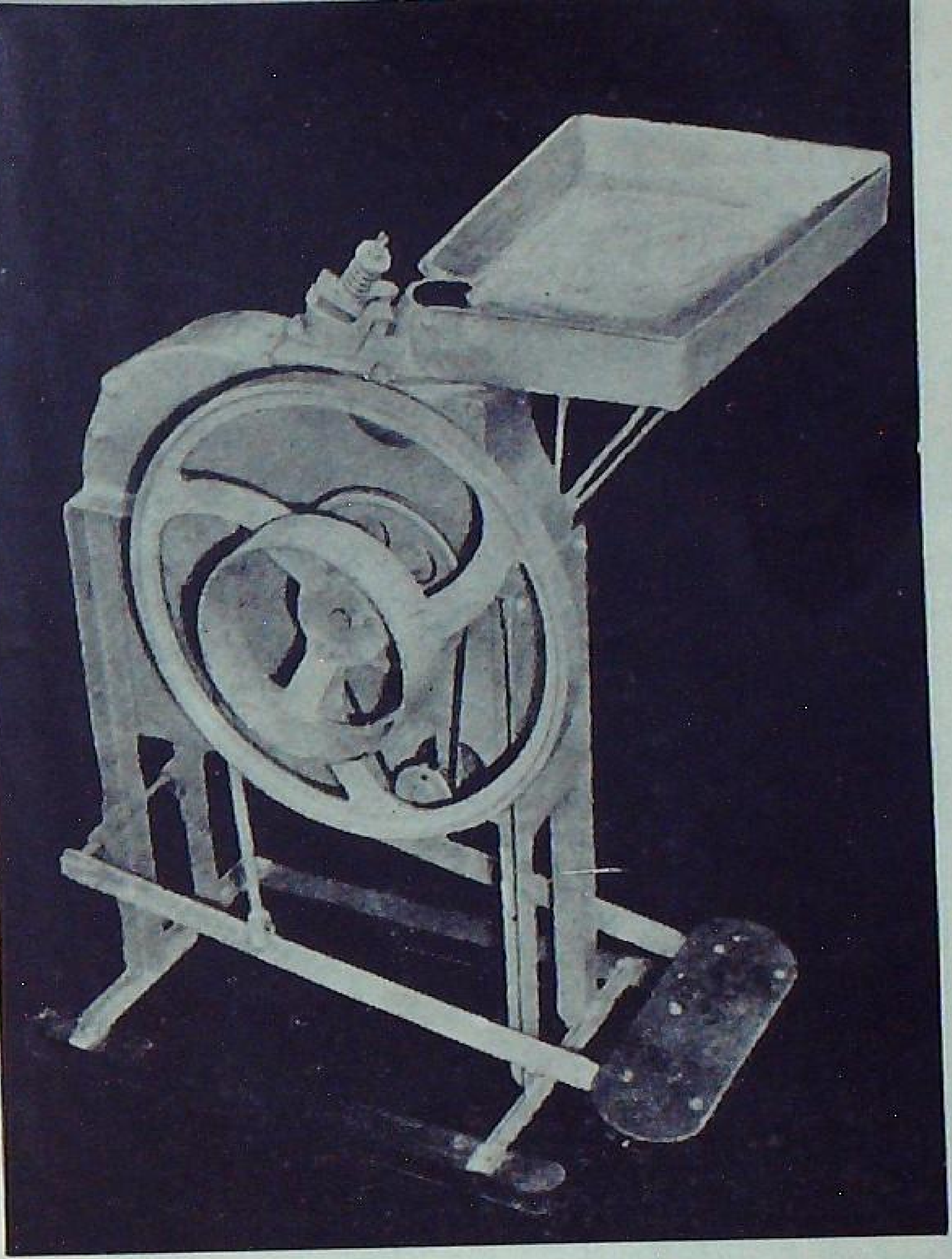
AGE OF ANIMAL

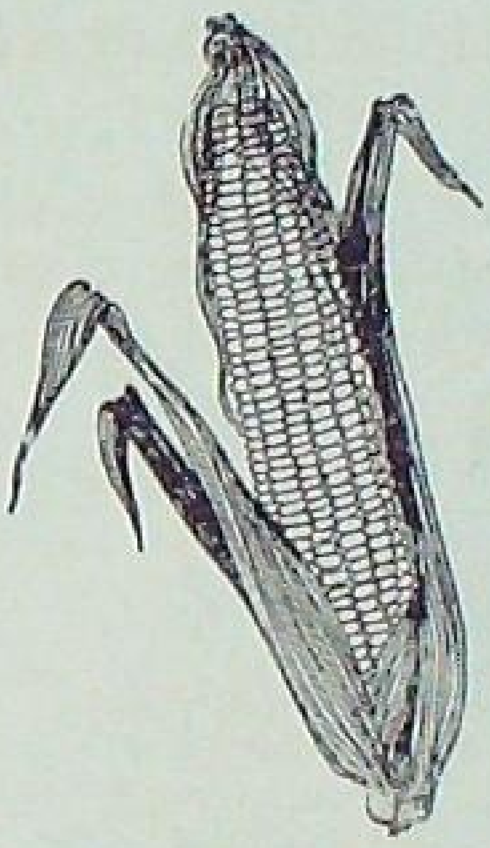
Before buying an animal, you should also know how old it is. This you can make out from its teeth. If you open the mouth of the animal, the front teeth you see in the lower jaw are incisor teeth. Cattle have no incisor on the upper jaws.

A calf at birth has two temporary incisors or milk teeth. At one week it has four, at two weeks there are six and at four weeks there are eight milk teeth.

At two years, the permanent incisors start coming up. Normally, at two and a half years, you can see two permanent incisors. At about three years and three months, there are four of these. At four years, there are six and at about five years there are eight permanent incisors in the mouth.

Looking at the teeth, you will be able to judge the age of the animal. After the age of five years, however, you can make out the age by looking at the wear and tear of the teeth.





Shelling MAIZE COBS ?

By D.N. KHERDEKAR

There are machines you can well use for the purpose

YOU can give up hand-shelling of your maize cobs for something very much better—a machine.

A small hand-driven corn sheller costs only Rs. 45—and if you can afford Rs. 160, you can buy one which is worked with a pedal.

Both remove the grain from the cob, easily and quickly. The bigger machine is provided with a pulley so that you can put a belt on it and use an electric motor or engine to run it.

The smaller hand sheller can shell about 1,000 pounds of corn a day, and the bigger one, about 3,000 pounds. The former one can be fixed on a wooden box. The latter comes with a stand.

In both these machines, the cob is inserted in a hopper which grips it. When the machine is run, a wheel with teeth on its face or a grooved disc rubs againt the cob and separates the grain.

The pedal-operated machine is manufactured by Nahan Foundry, Himachal Pradesh.

The Package Programme has made available plenty of improved paddy seed for raising

SPECIAL FARM FEATURE

Richer paddy harvests in
WEST GODAVARI

MULPURI Subrahmanyam of Pedapadu village is a typical farmer of West Godavari District in Andhra Pradesh. During the last *rabi* season, from his five acres he harvested 18 extra bags of paddy, worth 450 rupees. The main reason for this increase, farmer Subrahmanyam says, is "I got all the fertilizers I needed, and that too in time because of the Package Programme."

Like farmer Subrahmanyam, many other cultivators in the District could reap richer harvests last *rabi* and, during the

season, over 13 thousand metric tons of extra paddy, valued at 44 lakh rupees, was produced in the District.

THE PACKAGE PROGRAMME

West Godavari is one of the seven districts in the country where the Intensive Agricultural District Programme, popularly known as the Package Programme, is in operation. The Programme aims at a rapid increase in food production by providing farmers with all facilities such as improved seed, fertilizers, plant protection measures and farm credit needed for better crop production. Farmers are also assisted in adopting technical improvements in their farming, and in preparing their individual farm plans. This year. 61,200 individual farm production plans were prepared by farmers with the help of specialists in West Godavari District, and soon, such plans will be drawn up for all the cultivators coming under the fold of the Programme.

At the end of five years, which is the duration of the Programme, agricultural production in all the Package districts is expected to be raised by about 40 to 60 per cent.

eedlings ...

... and as much fertilizers as farmers need

Timely plant protection measures have helped many farmers in raising their crop yields

FERTILIZERS IN PLENTY

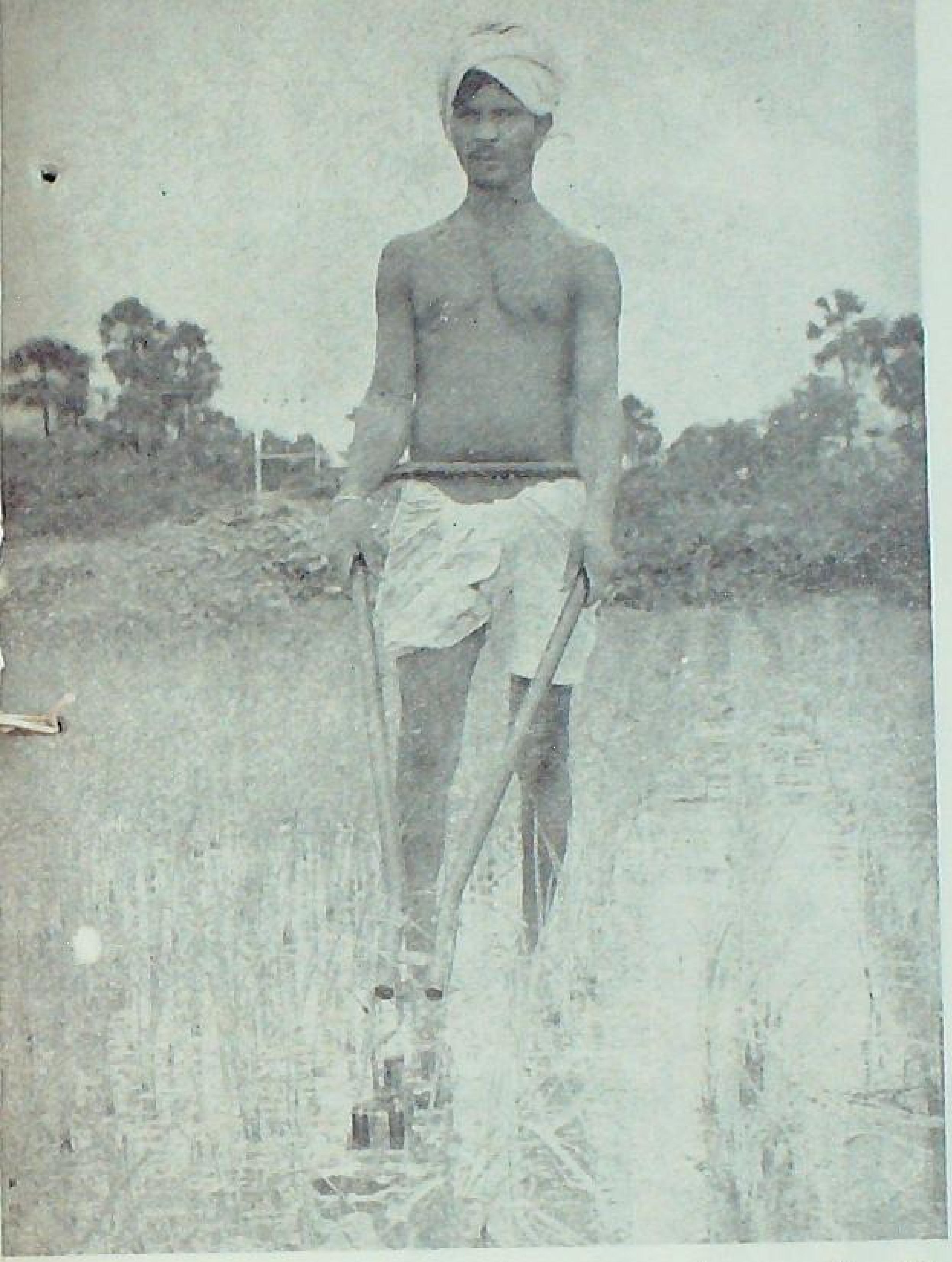
Where formerly farmer Subrahmanyam, like many other farmers, could get only a part of his fertilizer needs, now he can get as much as he requires. During the last *rabi* season, 4,600 tons of ammonium sulphate were distributed in West Godavari under the Programme, and this year, the Package authorities plan to distribute 26,000 tons of the fertilizer. The same is the case with other fertilizers like superphosphate. Simultaneously, green manures are also being raised on more acres. Chemical manures will prove more effective if the soil of the fields where they are to be applied is analysed, and the extent of deficiencies of various nutrients and their needs are found out. For this purpose, a soil-testing laboratory with a mobile unit is being established.

Improved seed suitable for growing in the District is also being rapidly multiplied for wide distribution to farmers. Already about 500 'A' class seed farms have been established in the District.

PLANT PROTECTION MEASURES

Sanam Nagaraju of Bhimdole, another farmer of the District, gave one other reason for the increase in his paddy yield. His five-acre plot of paddy was saved from a severe stem-borer attack due to effective and timely plant protection measures he undertook with the help of the District Specialists working under the Programme.

Since timely and effective action against pests and diseases is essential for saving the crop, Programme officials have worked out the actual requirements of pesticides village-wise



More and more improved implements like this Japanese paddy weeder are in use in West Godavari

and arranged for their supplies through cooperative societies. Now, about 100 sprayers and 200 dusters are available in the District and, in addition, 30 power sprayers are kept ready at the Block and District Headquarters for emergencies. Last *rabi* 1,600 acres of paddy were treated against stem-borer attack.

IMPROVED IMPLEMENTS

Improved agricultural implements help a great deal in making farm operations more efficient, leading to better crop growth and yield. Extension workers in the District have been successful in popularising these among the farmers. Over a thousand Japanese paddy weeders are in use in the District. About a thousand iron ploughs and a thousand oil engine pumping sets were purchased by the farmers within a year of the operation of the Programme. Similarly, a number of other implements, including 216 electric motors, 16 Archemedian screws, and 7 tractors have been purchased by the farmers.

To provide visual education to farmers on improved agricultural practices, hundreds of demontrations are organized on cultivators' fields every crop season. These demonstrations help farmers adopt easily these practices in their own fields.

EASY CREDIT FACILITIES

Many farmers, who were wanting to take up improvements on their farms, were unable to do so because they had no ready cash needed for purchasing fertilizers, implements or other equipment and materials. Shrimati Nagamma of Manchali village, who owns only one and a half acres of land, is one of them. She wanted to take up the Japanese method of paddy cultivation. The Package Programme came to her help, and through the local cooperative marketing society she could obtain on loan fertilizers worth 225 rupees. Many other farmers like Shrimati Nagamma are benefitted due to the strengthened cooperative movement in the District. During the last *rabi*, about 12 lakh rupees were given on loan to 3, 640 farmers, and this year, such loans will total 50 lakh rupees.

The West Godavari District Cooperative Marketing Federation has nine cooperative marketing societies at the taluka level with 147 rural credit societies on their roll. The distribution of fertilizers, oilcakes, improved seeds, improved implements, etc., is being done through these societies. In the last *rabi* season alone, these societies have enrolled 3,000 new members.

During the first season of its operation, the Package Programme has made striking progress in the West Godavari District, and Package officials as much as farm leaders of the District are hopeful of still greater achievements in the coming years.

RATS

THE ONLY WAY TO GET RID OF THEM IS TO KILL THEM

By D.B. REDDY

WITH six rats to every human being, no wonder the rat problem is a real farm and home problem.

Breeding about four times a year, rats multiply fast. A single pair of rats, left undisturbed, develop into a family of 1,250 in a year's time.

Harmful as they are, one way of getting over the damage they do to standing crops, farm produce and property, is to keep them away from houses, buildings, godowns and fields.

This being a difficult job, the only way to get rid of them is to kill them. And the easiest way to kill them is to poison them.

You can use zinc phosphide, strychnine, barium carbonate or 'Warfarin' as a poison for the rat bait.

Among these, zinc phosphide is the most commonly used poison. It is a heavy dark grey powder with a smell of phosphorous. It is deadly. Weigh, mix and handle it only out of doors or in a well-ventilated room, and wear gloves of leather or rubber while mixing and distributing the poison baits.

ZINC PHOSPHIDE

This is how you prepare zinc phosphide baits :

Take zinc phosphide 3 parts and any food material 97 parts by weight. The food material can be whole or crushed grain (such as maize, gram, wheat, *bajra* or other cereal), popped rice and pulses. You can also use the flour of these grains.

First soak the grain in water for a few hours. Drain out the water thoroughly, and put the grain in a container (earthen pan or shallow pan). Mix a small quantity of vegetable oil with the soaked grain and add the required quantity of zinc phosphide. Use a long-handled spoon for mixing. Don't touch the poison with the hand.

In case you are using flour for the bait, mix the zinc phosphide and flour with a long-handled spoon, and add enough water to make it wet. Then make small pellets of the size of the pea ; allow them to dry a little. Wrap about two spoonfuls of poison bait—pellets or grain—in a small piece of paper and keep it for placing in the rat burrows. Use only fresh poison baits every time.

STRYCHNINE

If you are using strychnine, mix one *chattack* of strychnine hydrochloride with five seers of *gur* syrup and 22 seers of soaked gram or other bait material.

POISON DUSTS

Pump poison dusts such as 'Cymag' or 'Cyanogas A' dust into burrows as such. These dusts, when they come in contact with the moisture of the soil, release hydrogen cyanide, which is a deadly poisonous gas.

Keep all poisons locked up and don't store them with food materials. Keep poison in places away from children, irresponsible persons and pets.

PLACING THE BAIT

Find out first the live burrows where rats live. This you do by first closing loosely all the burrows in the fields and in the bunds, and then examining them the next day. Burrows which you will find opened are live burrows, and place poison baits in these burrows. Place the small packets containing the poison bait three to four inches inside the burrows, but don't insert your hand in them. After placing the bait, arrange a little trash or leaves at the opening of the burrow before finally closing it with earth.

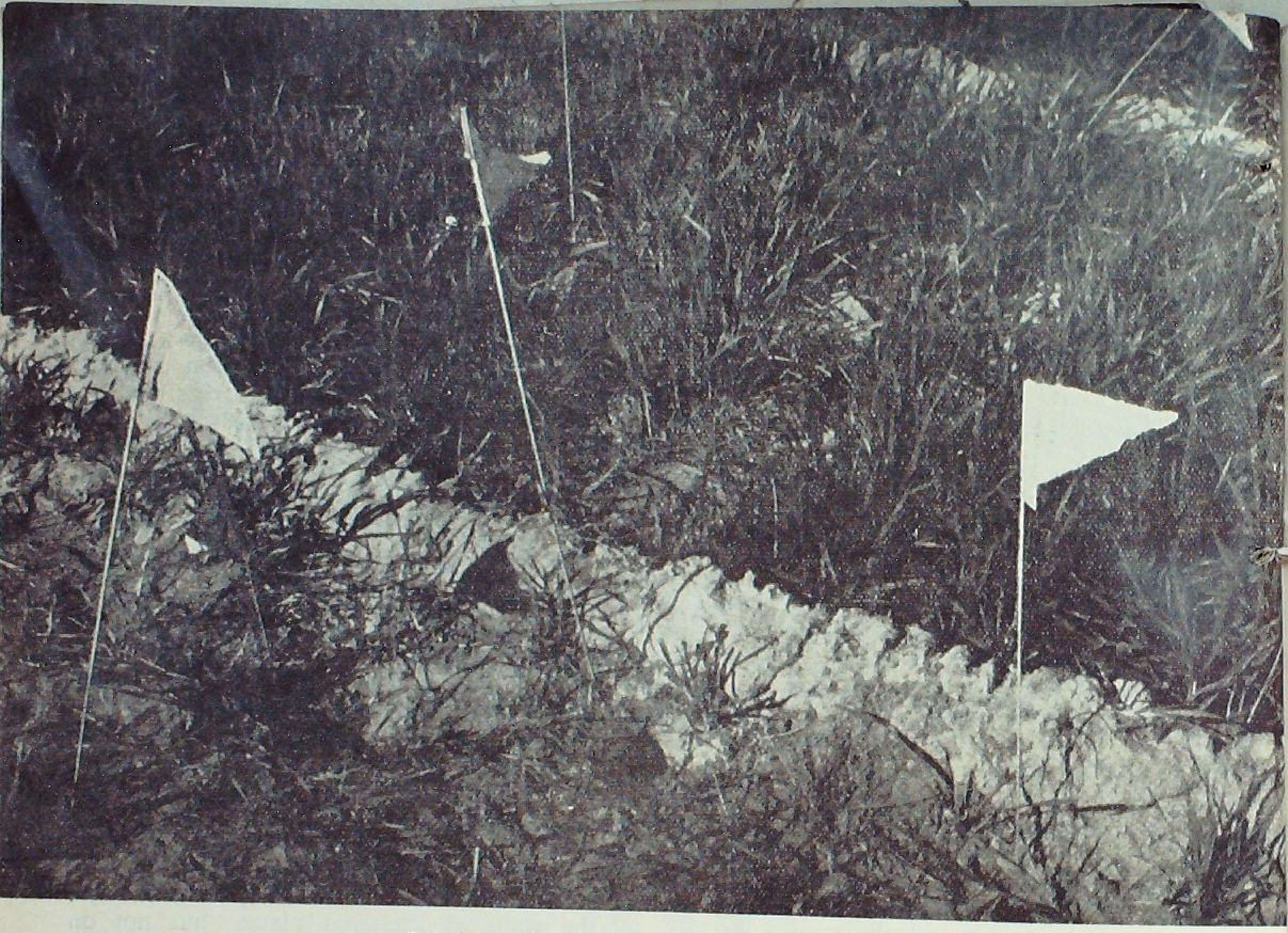
If you are using poison dusts, place them six to eight inches deep inside the burrows with a long-handled spoon, or, pump them in with a foot-pump. Close the burrows and all other openings with mud or moist soil.

Place poison baits in places where rats usually move about, along the runways, the walls or sheltered places, but not on packages, boxes or bags containing food material for human beings or animals. Do the baiting in the evenings. Introduce poison dusts into the burrows if there is enough moisture in them ; otherwise, do it early in the day.

To obtain better results, first bait the burrows with unpoisoned food material for a day or two. When rats begin to feed freely on this unpoisoned food material, follow with poisoned baits. If the bait material you use is not found suitable, try other food materials.

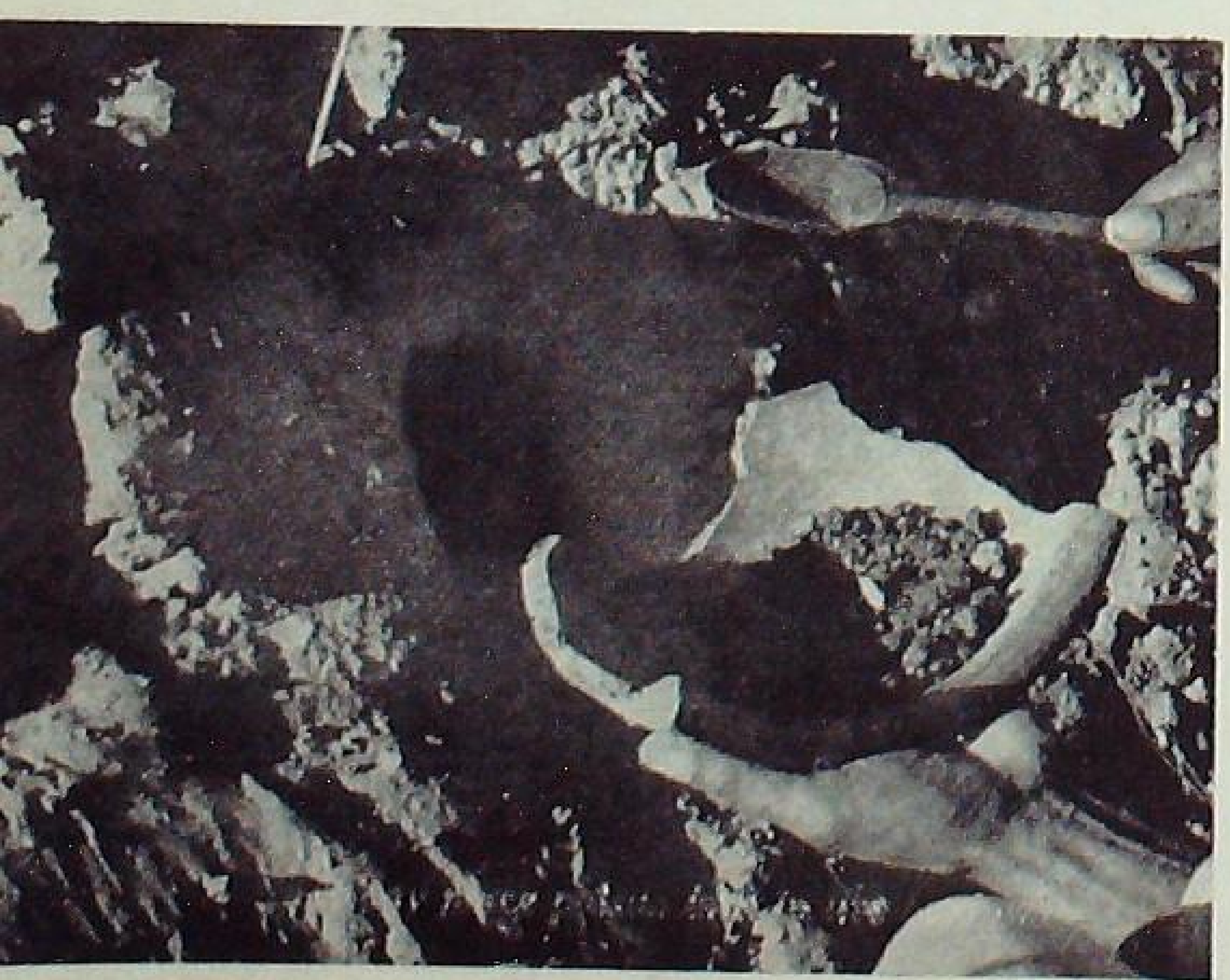
START A CAMPAIGN

One or two persons in a community or area, try as they might, cannot kill all rats. Individual effort would definitely bring good results, but you have to organize an anti-rat campaign so that all in the community can



First locate the live burrows and then flag them

Next day place poison bait in live burrows



take part. You will also have to continue the campaign for a few seasons. Cover all cultivated and uncultivated fields in the area.

Start with areas where rat menace is very serious year after year.

Collect the poison and the bait material in advance and distribute the same to the people at convenient places.

Get all farmers together and through the help of village panchayats and leaders, have a programme chalked out.

Get the farmers in each village to organize themselves into a number of squads and have them trained in the different steps to be taken up for anti-rat work, such as the location of live burrows and pre-baiting, and care

in handling poisons and poison baiting. The Gram Sevak, and the Agricultural Officer will help in training them.

Collect all unused poison baits and dead rats; destroy them by burning.

Normally, with a single operation, properly carried out, a large number of rats can be killed. However, repeat the process to deal with the rest.

As in the field, take up steps to kill rats in the houses and godowns also. Use traps and other methods for this purpose.

Once the place is cleared of rats, keep it clean as far as possible and inspect regularly to see if rats come back. All your work will be a waste if you allow new rats to come and occupy the area.

Rat control per acre costs very little, and everyone will be able to pay his share easily.

CARE

Since rat poisons are also poisonous to animals and human beings, handle them very carefully. Keep children, pets and animals away from poison and poison bait. When poison baiting has been done in open places, remove the bait early the following morning before the pets, animals or children have a chance to get to it.

Wash your hands thoroughly with soap and water whenever you have handled poison. Clean well all utensils and containers and materials used for mixing and placing the poison and poison baits.

Contact your Gram Sevak or Agricultural Officer if you need help in preparing and using poison baits or obtaining the poisons.

To eradicate rats, what is needed is to have community-wide campaigns

MAKING MONEY WITH

LATE CAULIFLOWERS

MONEY is waiting for you, if you turn in cauliflower in the market during winter. Hence, plan a crop of late cauliflower now.

Late cauliflower grows fast and hence needs a well manured and rich silty soil.

Farmers in the plains of North India grow imported cauliflower variety from Holland and Denmark. Varieties popular with them are *Suttons Snowball 16*, *Danish Giant* and *Suttons* improved *Snowballs*. These produce curds by mid-February and stay in the field for a month. Hence, they

harvest them in instalments for the market.

Local late varieties are as good as imported ones in quality, but they all come into curd at one time and, hence, you cannot harvest them in instalments. See which of these you prefer.

If you have raised a crop of *lobia* during July-September, plough it in. If you have not, try raising green manure next season. You can choose sannhemp, *mung* or *guar* instead of *lobia*. A green manure crop will reduce the demand on cattle manure.

If you have not raised a green manure crop, apply at least 400 to 500 maunds of well-rotted cattle manure per acre. It is better you apply superphosphate (to give 60 to 70 pounds of phosphoric acid). If you are raising a green manure apply superphosphate with it.

RAISING SEEDLINGS

Better raise your own nursery than buy seedlings from outside. If you want to raise an acre of cauliflower, you need 800 square feet of nursery.

Dig the nursery plot one foot deep. Apply a basket of cattle manure for every 20 square feet of the plot.

For this plot you need 4 ounces of of seed. Tie this seed in a muslin cloth bag and steep it in water at 124°F for half an hour. This will kill any disease that the seed may carry. Dry the seed and mix it with 1:500 'Agrosan G N' or 'Ceresan.' This will help control the 'damping off' disease.

Mix the seed with twice the quantity of wood-ash. With a rake mark lines four inches apart and sow the seed in lines. Cover gently with a wooden plank.

Water the nursery gently once a week. For small plots use a rose-can for watering.

In four weeks the seedlings will be six inches high with four leaves, and will be ready for transplanting.

Before lifting them from the bed, moisten the beds and use a rake to lift the seedlings. See that the roots do not get damaged.

TRANSPLANTING

After you have prepared the field well and levelled it, mark lines 2½ feet apart in it. Plant seedlings 2 feet apart in each row. You would need about 10,000 seedlings to plant an acre.

A month after transplanting, apply half a bag of ammonium sulphate (112 pounds) in small circles round the plant, and an inch deep. Repeat at least twice at monthly intervals. If you have not been getting excellent white curds, but pink, yellow or dull brown ones instead, it may be that the soil needs boron. In such a case, spray borax at 60 to 80 gallons per acre (*sohaga*) at the time you apply ammonium sulphate a month after planting. Dissolve three ounces of borox in four gallons of water (roughly a big bucket). Repeat the spray thrice once every fortnight if necessary.

INTERCULTURE

Due to irrigation, roots of cauliflower plants may lose their firm hold in the soil. Hence, earth up around each plant while weeding. Remove weeds like nut grass, *hariali*, mustard, *piazi* (wild onion) once about a fortnight.

Cauliflower needs a good supply of water to draw in food so that it can put on fast growth. Hence, in silty and alluvial soils, irrigate at weekly intervals. These intervals vary according to your soil types.

HARVESTING

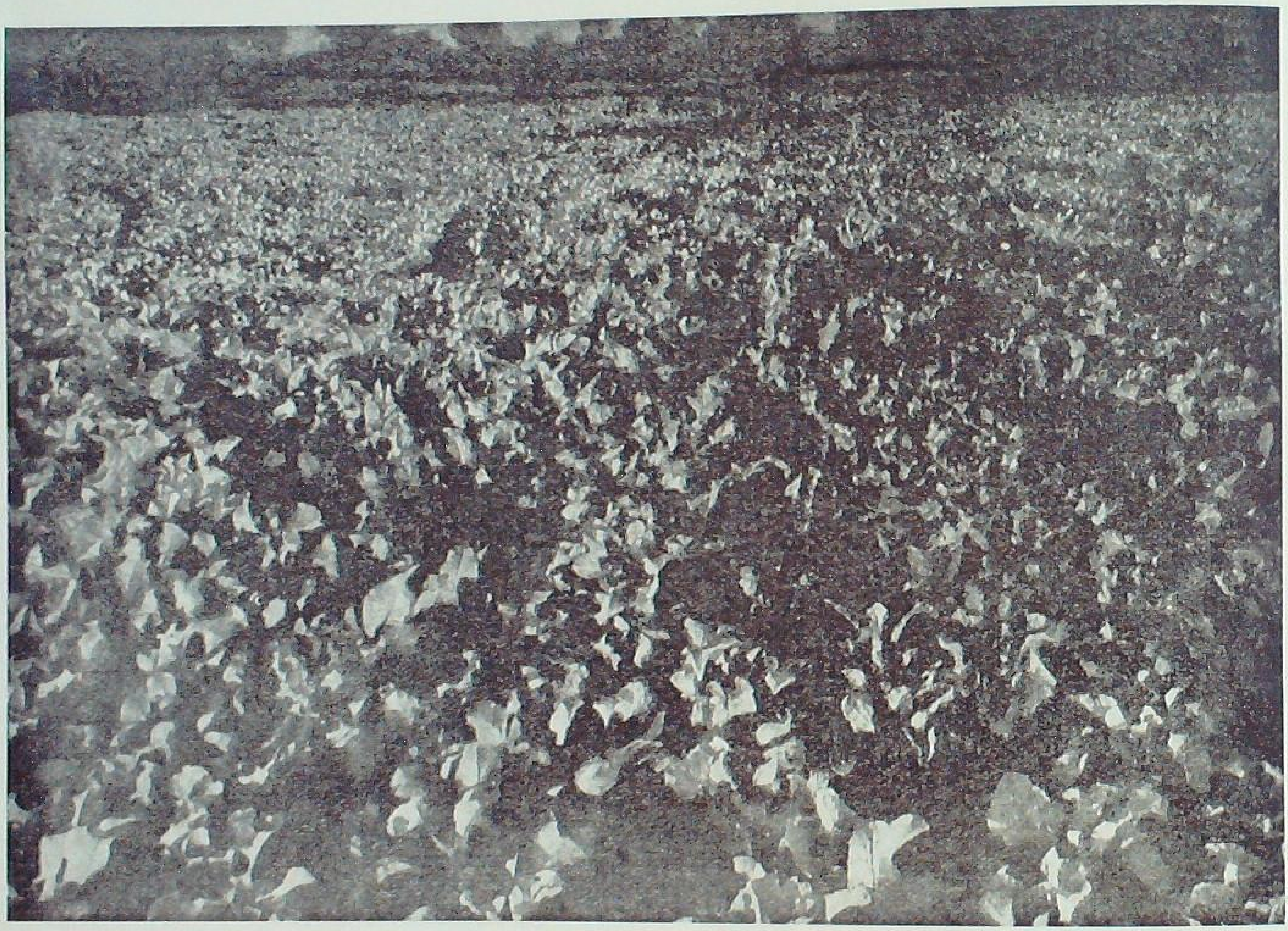
The crop forms curds by mid-February. If there is strong sun, cover the curds with the top leaves. Fully developed curds weigh six to eight pounds.

The leaves are also a good feed for cattle. Where you have used pesticides, wait for a fortnight after spraying before feeding them to cattle. Similarly, do not

harvest the cauliflower curds within a fortnight of spraying chemicals.

An acre of late cauliflower may yield 6000 to 8000 curds, weighing 400 maunds.

Use 'Malathion' 50% EC (one part in 1,200 parts of water) for controlling aphids. Give three sprayings at intervals of 8 to 10 days. You should use and handle this insecticide with great care. You can use 40 per cent



A crop of late cauliflowers can be really paying one

PESTS AND DISEASES

In nursery beds, seedlings may wilt and die suddenly. This is due to the 'damping off' disease. Control this by stopping watering and forking up the top soil. A spray of one per cent Bordeaux mixture to the soil would be of help.

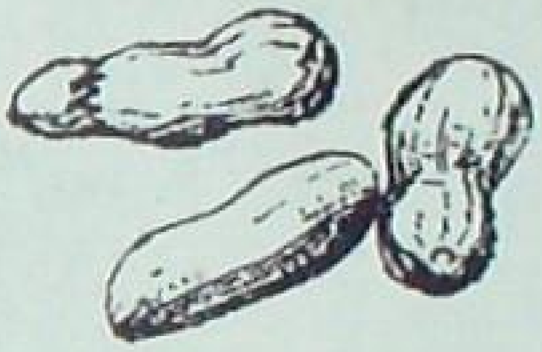
Late cauliflower is attacked by two important pests: aphids and caterpillars.

nicotine sulphate (one part in 800 parts of water) instead, when the heads are formed.

For controlling the caterpillars, use wettable DDT (one part in 250 parts of water) spray. Spray from time to time, whenever you find large number of caterpillars. Don't use DDT if the cauliflower heads are to be eaten within three weeks after spraying, but use pyrethrum instead. 'Pyrodust' is a product made from pyrethrum, and it will be safe to apply this dust to your crop.

—L.V.R.

MILK



but from groundnut

By DOLLY DAVID

WHEN you find you cannot get cow's milk for the children in enough quantities or at a cheap price, you can still feed them with milk—an equally good one—prepared from groundnut.

Groundnut 'milk' lacks only in calcium (lime) which cow's milk has. Hence, you make up for it by adding some lime (*chuna*) water to groundnut milk while making it.

For preparing the milk this is what you need :

A pound of healthy groundnuts (with shells)

Water	6 glasses (eight-ounce capacity each)
Salt	a pinch or according to the taste
Chuna or lime water (saturated)	1½ glasses

Extra water for soaking and grinding.

And this is how you prepare the milk.

Shell the groundnuts; the seeds will now weigh half a pound.

Soak the seeds in water for eight to ten hours.

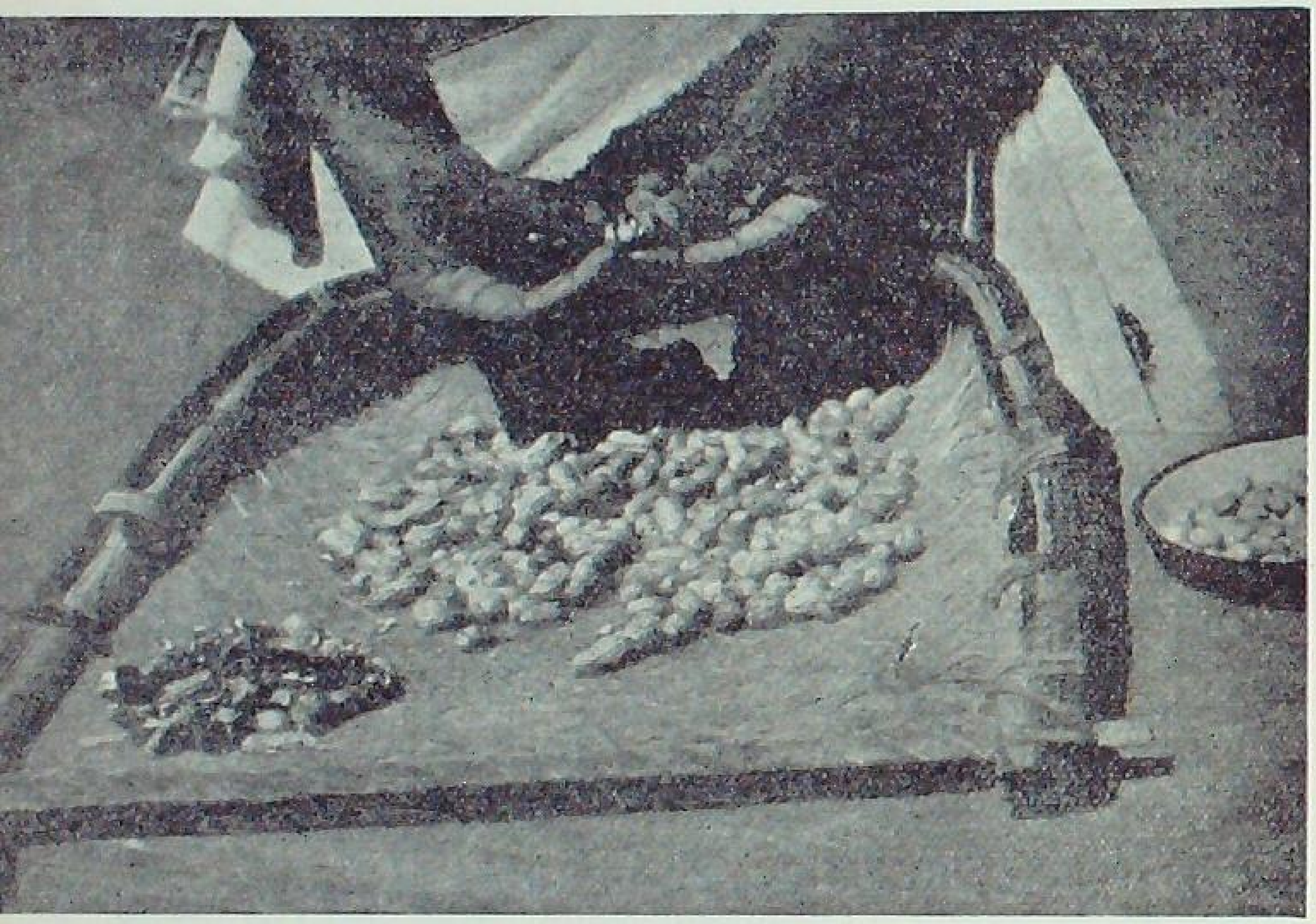
Remove the red skin of the soaked groundnuts by pressing and squeezing.

Grind the seeds well to a paste on a grinding stone.

Add six glasses of cold water, stirring all the time, so that no lumps are formed; add salt to taste.

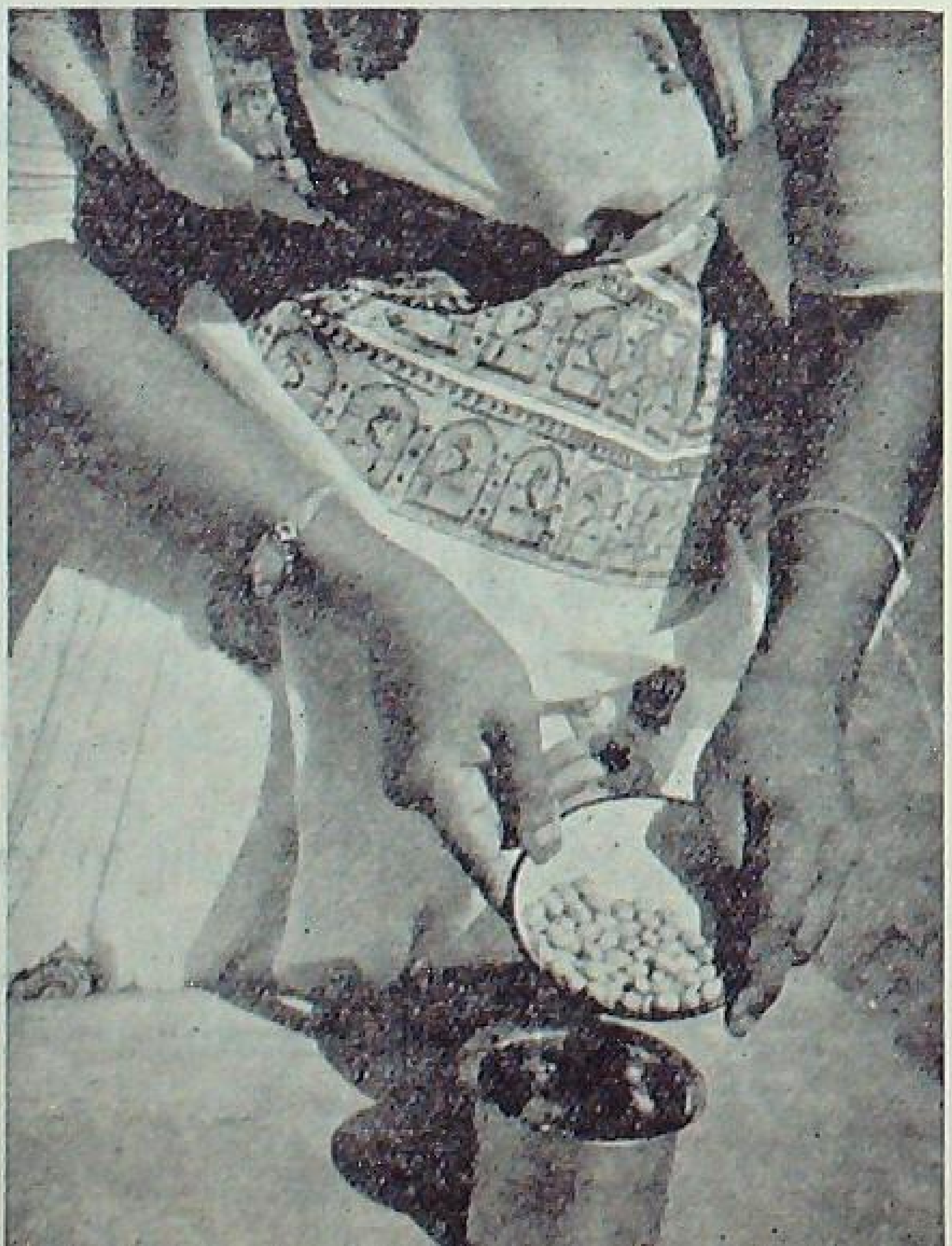
Add $1\frac{1}{2}$ glasses of saturated lime water.

Boil for five minutes, stirring all the



Select and shell only healthy groundnuts

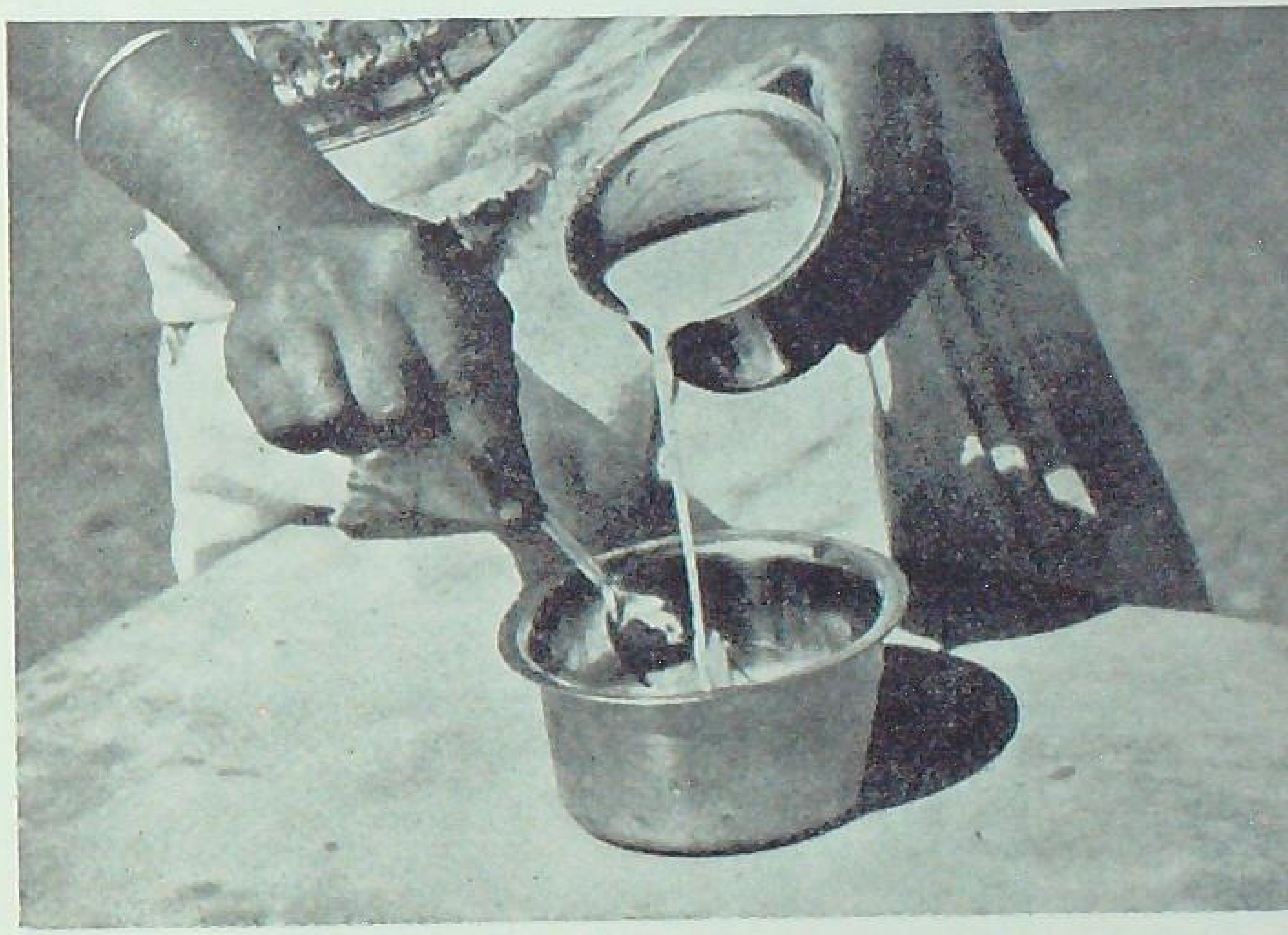
Soak the shelled groundnuts...



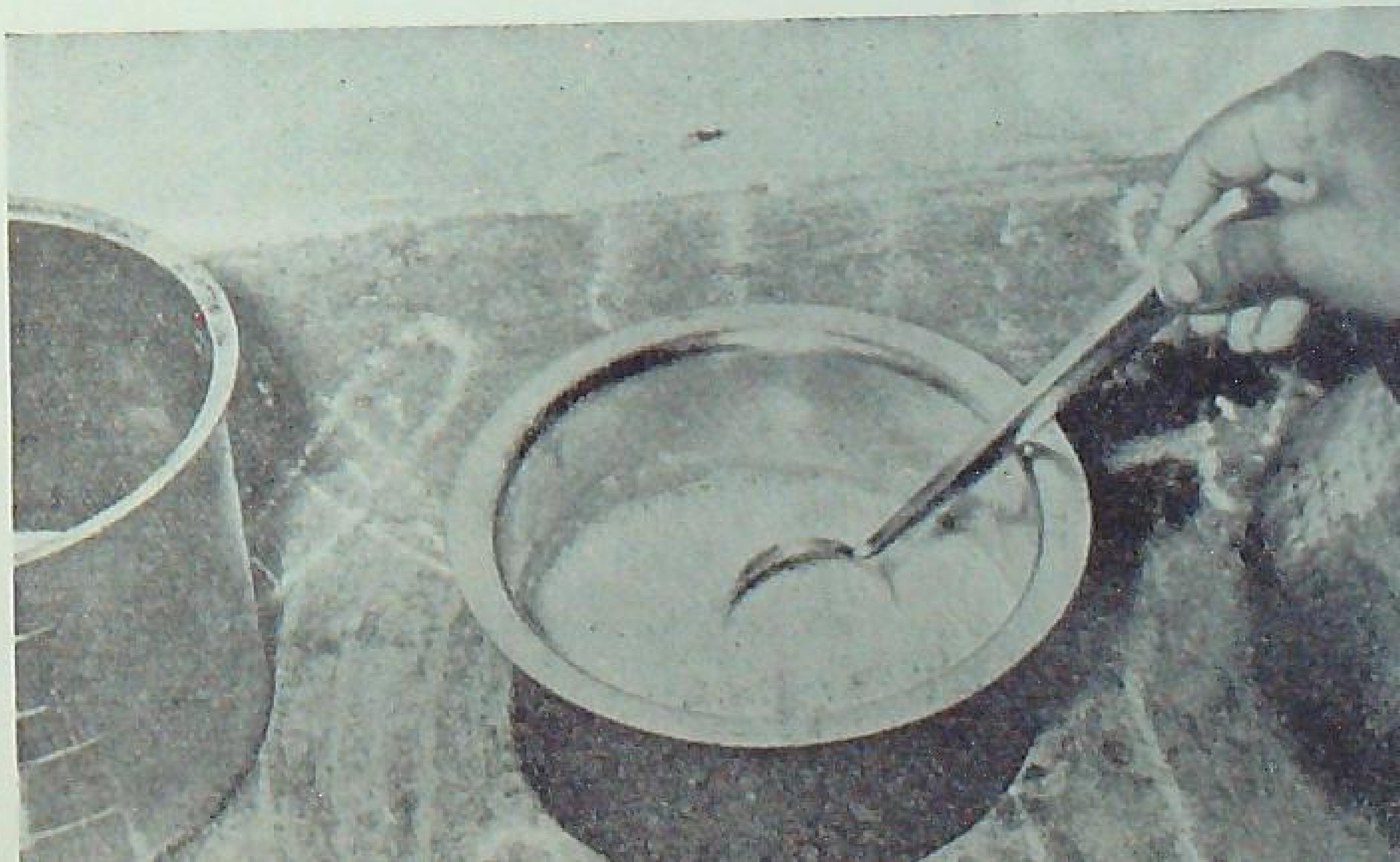
.. and remove their skin

Grind to a paste

Add water and lime water

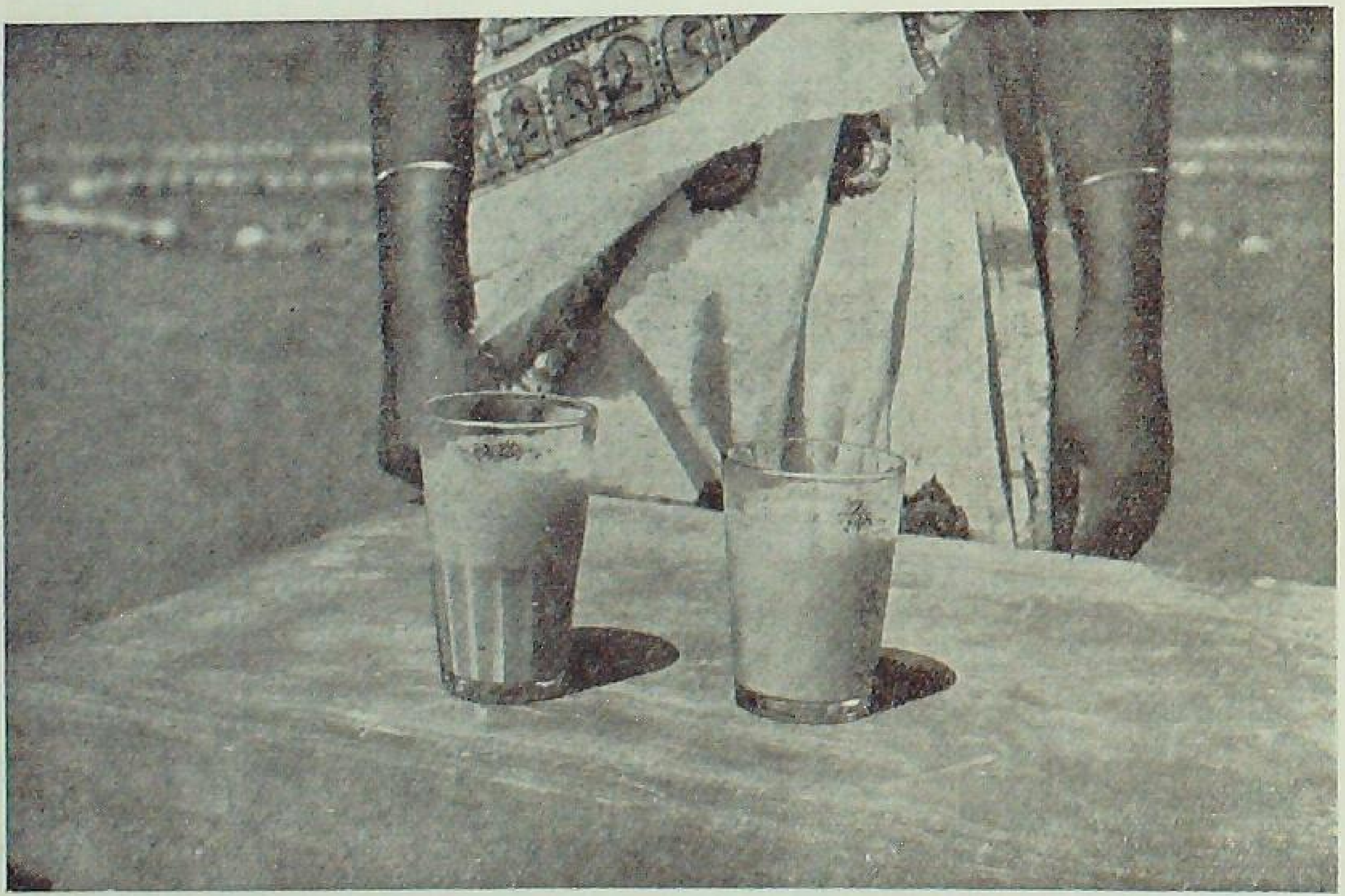


Boil, stirring all the time



Strain through a clean cloth...

...and you have now the milk from groundnut!



time, so as to prevent it from sticking to the vessel. Cool and strain through a fine muslin cloth.

Half a pound of groundnut seed costing 50 nP. would give 2½ pounds of milk.

The author gratefully acknowledges the help rendered by the Chief Instructress, Home Science Wing, Bhavanisagar, in preparing the article.

control of sugarcane pests

Exterminate Borers, **Lygaeid** bugs, Pyrilla & Whitefly.

These thieving **insects are** silent enemies of the sugarcane grower. Stop them from pilfering precious crop by using **Endrex 20,** a successful spray containing 2 lbs. of **endrin per gallon.**

Endrex 20 controls Borers with a timely spray of $2\frac{1}{4}$ lbs. per acre at the time of egg-hatching.

Lygaeid bugs are brought to book with a 1 lb. spray per acre.

endrex20

Pyrilla & Whitefly infestation ends with a $\frac{1}{2}$ lb. spray **per acre.**

Endrex 20 can be sprayed with equal success from the ground or from the air. Aerial spraying on sugarcane has been found most effective in large-scale operation by Government planes (which can be hired to private farmers).

Officially accepted by Research Stations, State Agricultural Departments (as well as by private estates), **Endrex 20** is the most effective insecticide against a large range of agricultural crop pests.

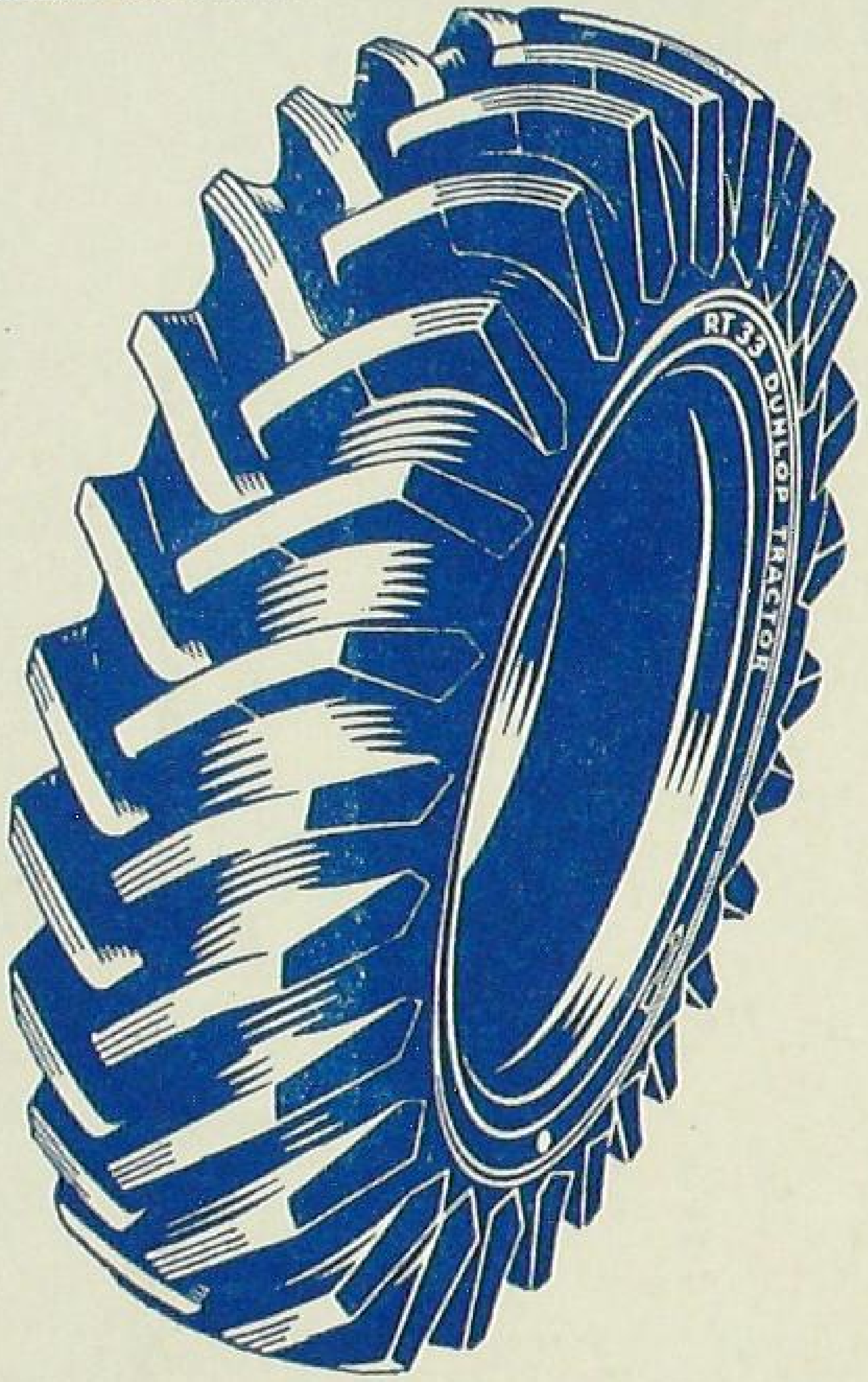
FOR AGRICULTURAL CHEMICALS

BURMAH-SHELL

ASP/BS/D-1A

Regd. No. D-1180

This tyre lowers your farming costs

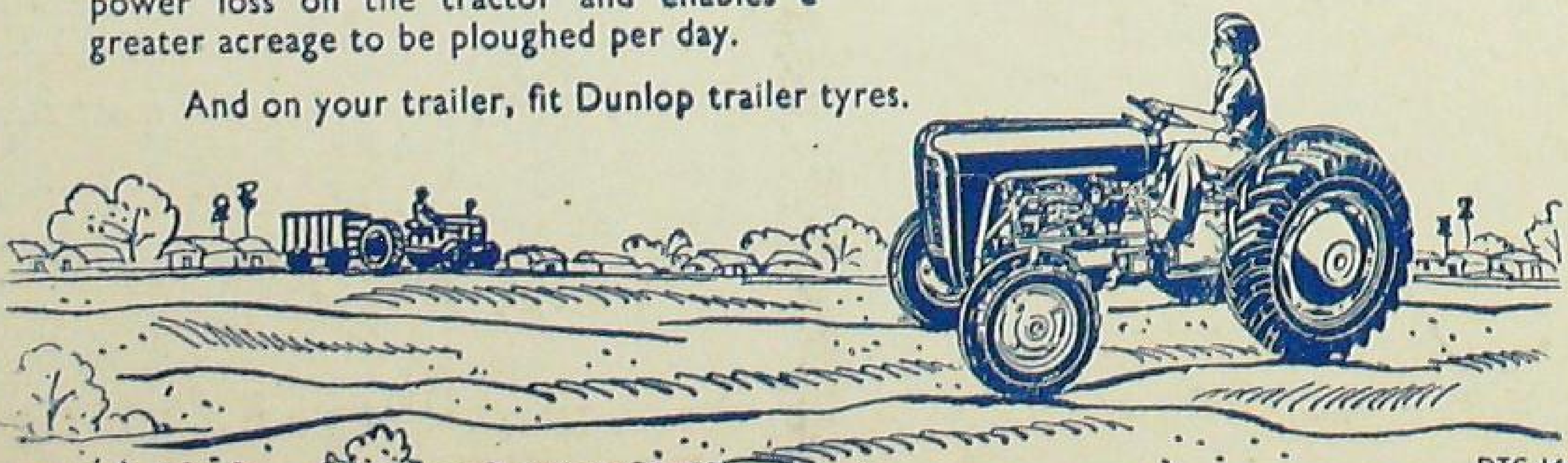


"I work my tractor hard, especially in the busy season..." This is a typical comment from farmers anxious to get the most out of their machines. Their work becomes easier with the Dunlop RT 33 open centre tractor tyre. This tyre has more tread bars to give greater grip on hard, dry soils; it reduces power loss on the tractor and enables a greater acreage to be ploughed per day.

And on your trailer, fit Dunlop trailer tyres.

DUNLOP

More tractors in India are fitted with the Dunlop RT 33 tyre than any other make



DTC-14

Published by the Farm Information Unit, Directorate of Extension, Ministry of Food and Agriculture, Krishi Bhavan, New Delhi, and printed at the Asia Press, Netaji Subhash Marg, Delhi-6